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THE
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OUR BIG TREES SAVED

IN THE scenic heart of the Sequoia National Park, the only section of the magnificent 160,000-acre playground situated in California which is at the present time accessible to motor-driven and horse-drawn vehicles, stands a group of trees, the *Sequoia washingtoniana,* known as the Giant Forest, and in this forest grow the loftiest and most venerable living things that Nature has produced.

The Sequoia National Park was constituted a government preserve to safeguard these very trees, some of which were 2,000 years old when the Christian era dawned. But it was a preservation that did not protect, for the very acres upon which grew the finest specimens of the *Sequoia washingtoniana* remained in the possession of private parties to whom they had been patented before the park was created.

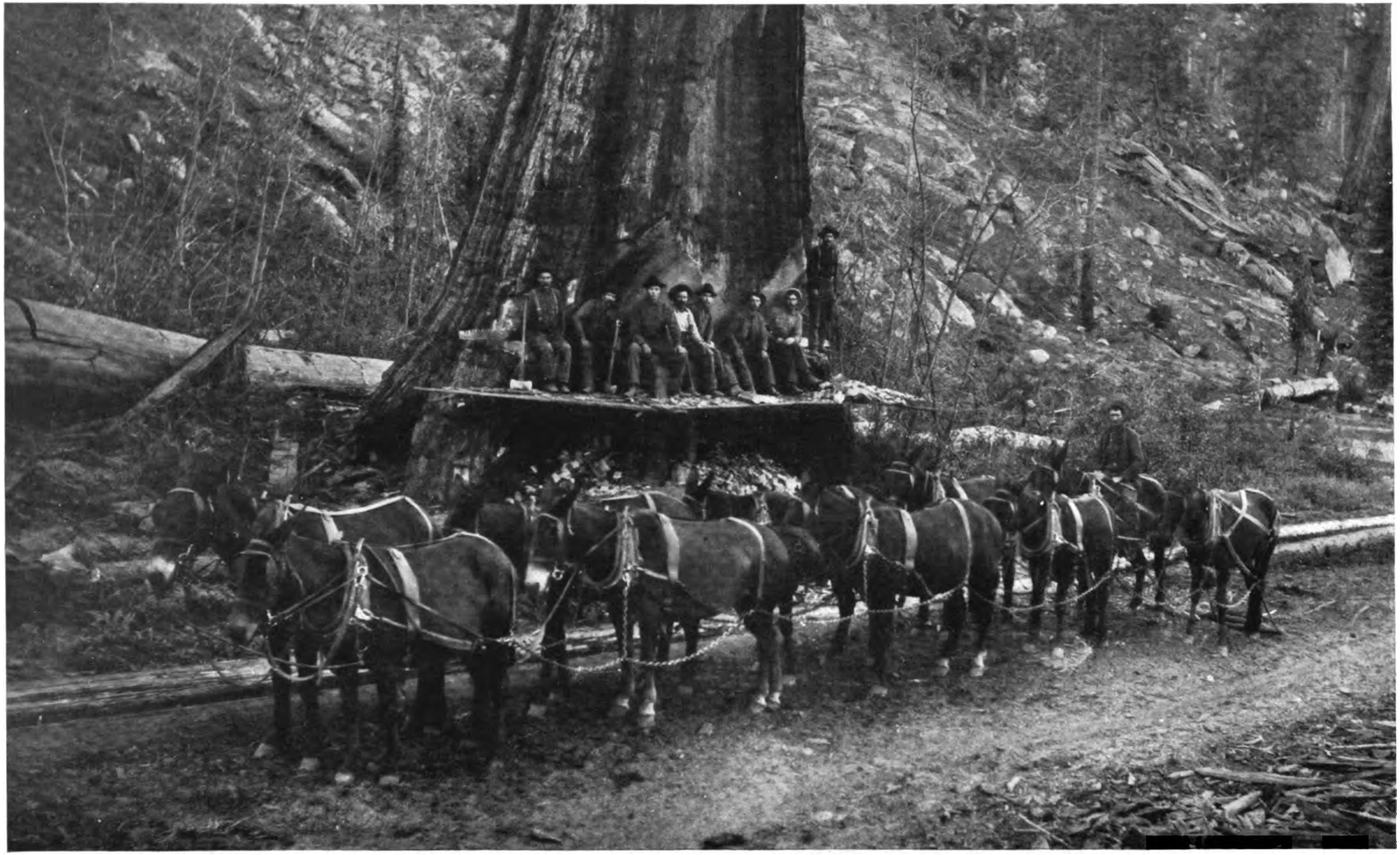
Some months ago the Department of the Interior, realizing that the constantly increasing value of timber had become a rapidly growing temptation to these owners to convert the trees into lumber, secured from Congress an appropriation of $50,000 to purchase the coveted land. When the effort was made to buy the holdings, however, it was discovered that the owners could not fairly part with their sequoia trees except on condition that adjacent property be purchased also, the supplementary lands bringing the price up to $70,000.

After learning from their expert appraisers that the actual market value of the timber standing on these holdings amounted to $156,000, and that the price of $70,000 was, therefore, most reasonable, showing that the owners wished to coöperate in their preservation, the department secured an option on the land for six months.

With the expiration of the option only three weeks off, and with no prospect of being able to secure the necessary additional appropriation of $20,000 from Congress during its pre-holiday session, the Department of the Interior had practically lost all hope of saving these most highly prized of all trees for the American people.

In this predicament one of the officials of the department recalled the splendid work which has been done for a number of years by the National Geographic Society in stimulating public interest in the preservation of the nation's playgrounds and in safeguarding our song birds and wild life. Why not appeal to this Society, whose more than half a million members represent every State in the Union, and who would be deeply interested, individually as well as collectively, in the preservation of this forest wonderland? The suggestion was adopted and the appeal was submitted to the Society's Board of Managers.

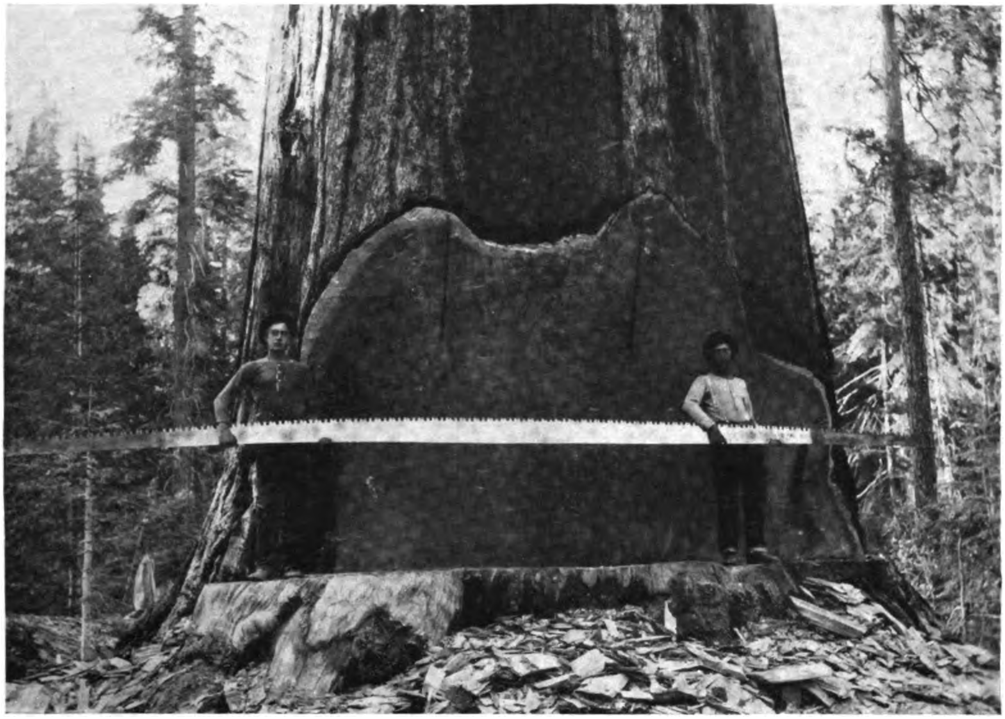
As was so earnestly hoped, the Society's governing body immediately appreciated the exceptional opportunity which was about to be lost to the American people, and at a meeting attended by every member of the Board excepting two, who were out of town, gladly appropriated the necessary $20,000. And thus was accomplished a unique coöperation of a great national scientific society



Photograph by A. R. Moore

THE ONE ENEMY THE BIG TREE FEARS—THE LUMBERMAN

In felling a big tree a platform is first built above the buttresses of the trunk. On this two men stand, each with a double-bladed axe, with which, with broad swinging strokes, they gradually chop their way in to the heart. Then with a long cross-cut saw they attack it from the other side. With smooth, flowing movement, rather than rough, jerking motion, they pull the keen-toothed blade back and forth, keeping it well greased all the time, until they approach the center from that side. A series of wedges follow the saw to keep the tree from settling and closing the path it has cut. These wedges gradually force the giant over toward the chopped side until finally, with a mighty swaying, it passes out of the perpendicular, and with a crash like the terrific roar of a raging sea falls prone along the line predetermined for its cradle.



Photograph by A. R. Moore

A 25-FOOT SAW USED FOR FELLING BIG TREES

While wedges are required to keep the tree from "pinching" the saw, and a good supply of axle grease or other lubricant is necessary to overcome friction, elbow grease in liberal quantities is the first essential in handling one of these big blades.

with the national government, whereby one of the country's noblest scenic resources has been presented to the American people for their perpetual enjoyment.

When one recalls that the Giant Forest is the largest intact body of trees of this species in existence, with the General Sherman as its king—a wonderful specimen 103 feet in circumference, 280 feet tall, as high as the dome of the National Capitol* — our hearts thrill that these masterpieces of nature have been rescued from the axe.

A thousand years may not bring them to their full stature, but a few days may wipe them out forever. Unafraid of wreck and change, untouched even by "time's remorseless doom," they have come down to us through centuries—aye, through millenniums; and now will live on through other centuries, a link to bind the future with the past.

Whoever has stood beneath these towering giants of the forest feels a reverent love for these grizzled patriarchs! The oldest living thing! There is not a nation on the face of the earth today but what was born, mayhap, a thousand years after they reached their maturity.

Nations have risen, reached their prime, and passed on to the decay and oblivion that is the ultimate fate of all things temporal, and other nations have succeeded them, in their turn to be followed by still others, since the great trees began their existence. World powers have arisen, run their course, and disappeared—meteors, as it were—in the sky of history, and the big trees still live on!

Who could replace them? Not man, for never yet in all his existence has he had continuity of purpose enough to plan 2,000 years ahead. The mutations of time in twenty centuries leave only here and there a silent monument to speak of the past, and even these have been the prey of generations coming after their builders. Some of the most magnificent marbles in Athens and Rome were burnt

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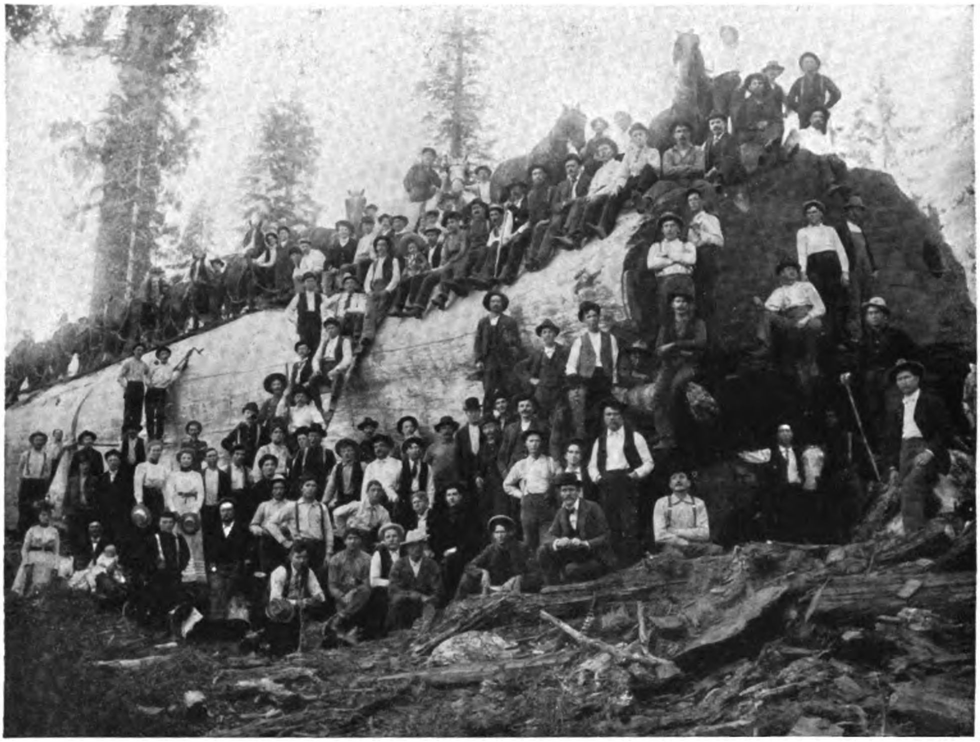
*A photogravure of this magnificent tree, 23 x 8½ inches, was published in the April, 1916, number of the GEOGRAPHIC MAGAZINE.



Photograph by A. R. Moore

A CALIFORNIA SEQUOIA WASHINGTONIANA LOG, 26 FEET IN DIAMETER

A thousand years scarcely serve to bring a sequoia to its maturity, and it may be hale and hearty still when three thousand summer suns have looked down upon it; but a day may lay it low forever.

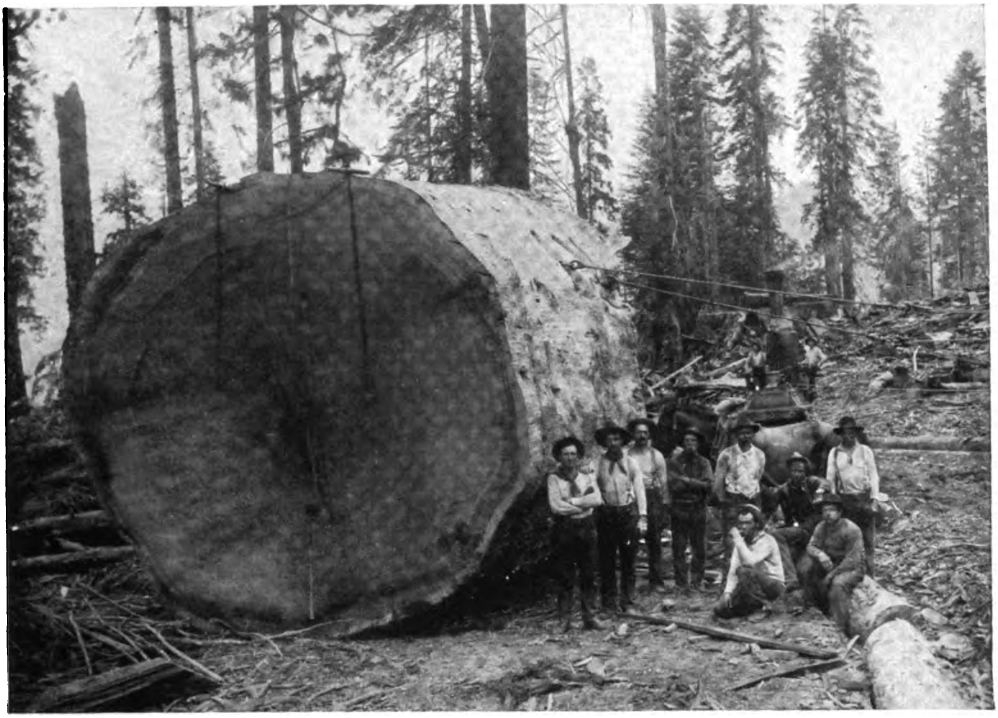
into lime for agricultural purposes, and even the Pyramids have served as quarries to the indifferent successors of those who raised them.

Yet when unnumbered thousands of Egyptian slaves were laboriously transporting the stones for Cheops across the Nile Valley and hoisting them into position, these hoary old veterans of the California mountains were sturdy saplings.

The human progress they must have witnessed! In their early youth the children of Israel were wandering through the Wilderness of Sin. When the Star of Bethlehem shone down over that lowly manger in Judea, proclaiming the second deliverance of mankind, who knows but that these monarchs of the California forest which have just been rescued from the woodman's axe joined in singing "Glory to the Highest," as the winds of the East swept over the West!

The very race that has risen up to save them was perhaps overrunning Europe, wrapped in skins, living by the chase, and using the bow and arrow, when they were taking root. Instead of medicine, men were resorting to amulets and charms. The most complicated piece of machinery that had yet been invented was the hand-loom. There was not a screw, a bolt, or a nut in existence. There was no printing press, no steam-engine, no microscope, no telescope, no telegraph, no telephone. The tallow dip was the only method of lighting; the caravan, the sail and row boat, and the runner were the only means of international communication.

As a hunter keeps a record of the bears he has killed by the notches in his gunstock, so the big tree keeps an account of the years it has lived by rings concealed within its trunk. Every year that it lives it grows in girth a tiny bit—in youth faster, in age slower, in fat years more and in lean ones less. But it never fails to add its ring with each passing year. Examine the next pine stump you come to and you will see how these rings start out from the center like those on the



Photograph by A. R. Moore

A CALIFORNIA LOGGING SCENE

In estimating the age of a standing tree the rings on the end of a log of a fallen one are counted, and the number of years required for an inch of average circumferential growth determined. If the fallen tree is in the immediate neighborhood and of approximately the same diameter of the one whose age is to be estimated, the remainder of the problem is simply one of determining this diameter in inches and multiplying it by the average number of rings to the inch.

water of a pond where a pebble falls. Count them and you can know to a certainty the age of the tree.

The purchase was completed and the title to the Big Trees passed to the U. S. Government on January 17, 1917.

By direction of the Board of Managers of the National Geographic Society, the official correspondence on the subject is published below.

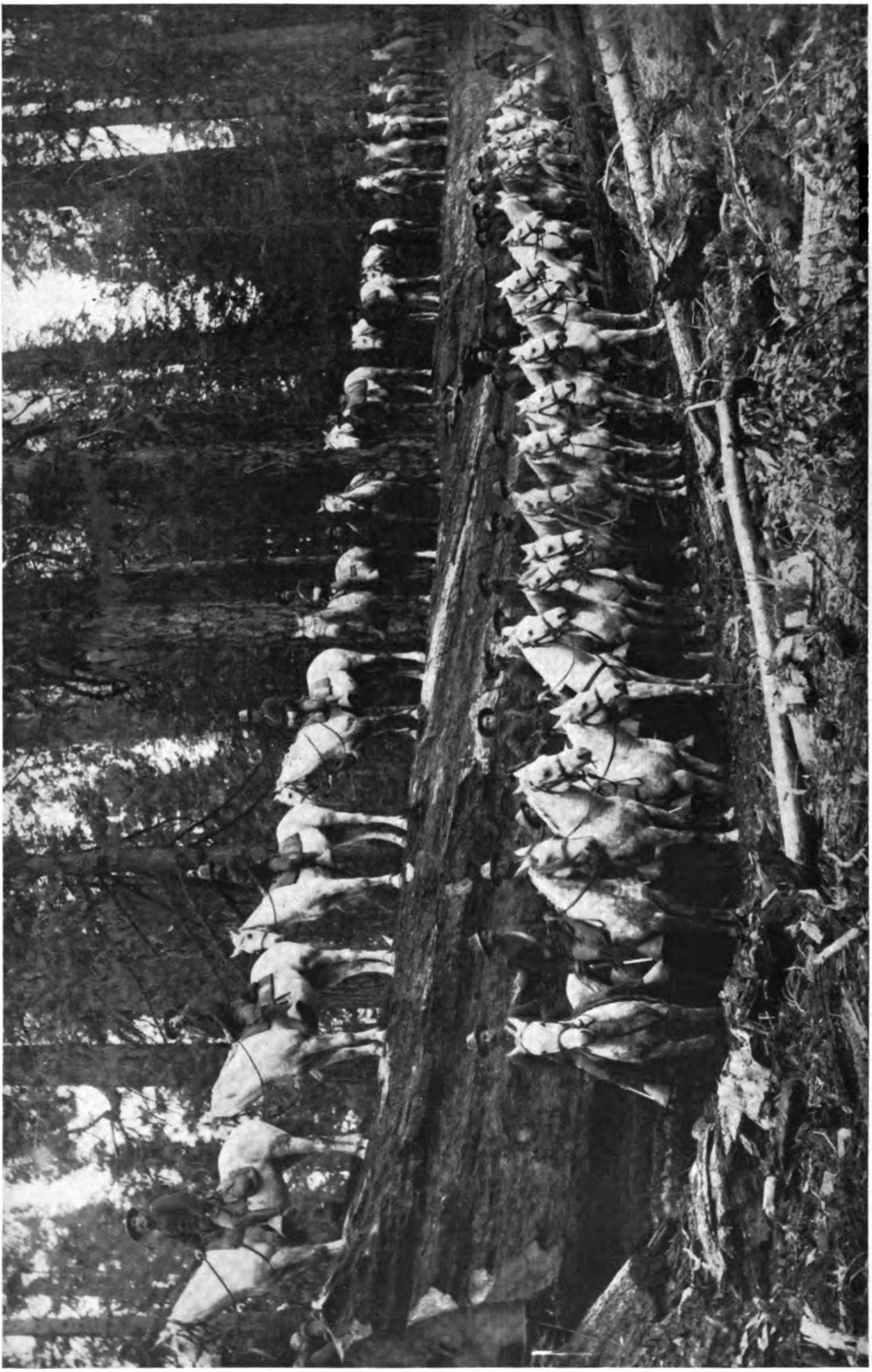
NATIONAL GEOGRAPHIC SOCIETY,
NOVEMBER 11, 1916.

DEAR SECRETARY LANE:

I have much pleasure in advising you that the Board of Managers of the National Geographic Society, being informed of your efforts to enable the United States Government to secure possession of the Giant Forest in the Sequoia National Park, and of the urgent necessity of $20,000 being made immediately available for the purchase (in addition to the $50,000 appropriated by Congress for the purpose), at a meeting yesterday unanimously adopted the following resolution:

"Resolved, That the Board of Managers of the National Geographic Society authorizes the expenditure of not exceeding $20,000 for the purchase of private lands in the Sequoia National Park, to be donated to the National Government for park purposes, in accordance with the provisions of the Act of Congress, July 1, 1916, Public 132, 39 Stat., 308, and that this sum shall be paid from the Research Fund of 1916; and that there is given to the President, the Director and Editor, and the Chairman of the Finance Committee, as representatives of the Society, authority to arrange with the Secretary of the Interior the details of the purchase and donation."

The National Geographic Society has watched with keen interest the rapid development of our national parks by the Department of the Interior and heartily



Photograph by A. R. Moore

A TROOP OF UNITED STATES CAVALRY AND A FALLEN SEQUOIA

Three thousand fence-posts, enough to fence in 8,000 acres of ground; some 700,000 shingles, enough to cover seventy houses, may be gotten from a single one of these big trees

Photograph by A. R. Moore

A GIANT SEQUOIA THAT SPLIT IN FALLING

John Muir counted four thousand rings from the heart out of one fallen giant. That tree was a thrifty sapling when Abraham went into Egypt. It was already a seed-bearer when Sodom and Gomorrah were destroyed. It was as old as American civilization when Joseph was sold into Egypt. It was nearly a thousand years old when David slew Goliath. And it was older when Christ was born than the Christian religion is today.

congratulates you upon the work which you have done in safeguarding these great national playgrounds for the coming generations and in making them accessible to visitors.

Assuring you that the National Geographic Society, through its Board of Managers, is very glad to have the privilege of coöperating with the government in preserving these priceless natural treasures to posterity, I am,

Yours very sincerely,
GILBERT H. GROSVENOR.

THE SECRETARY OF THE INTERIOR,
NOVEMBER 20, 1916.

MY DEAR MR. GROSVENOR:

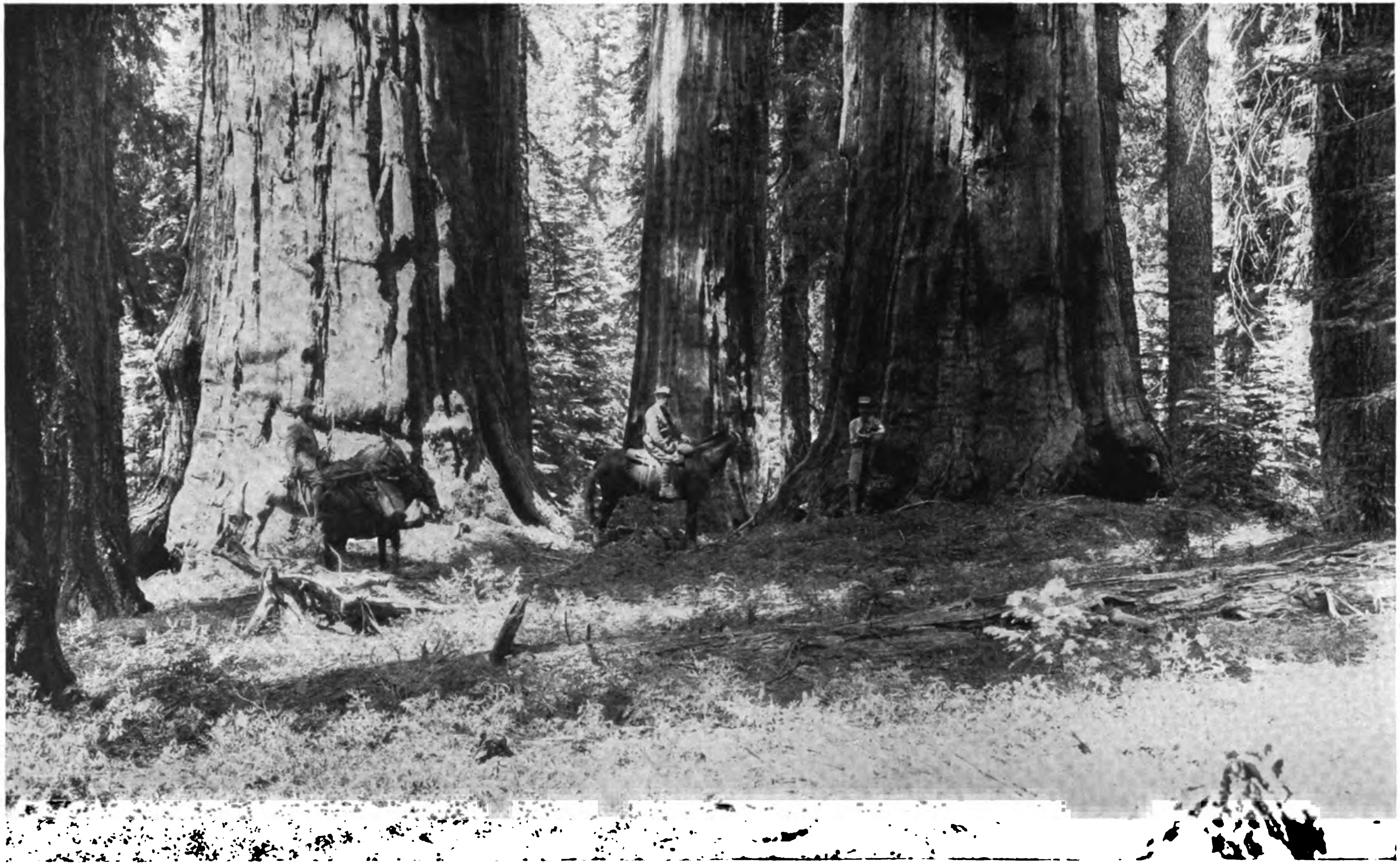
I beg to acknowledge your favor setting forth the resolution of the National Geographic Society by which it is made possible for us to secure, on behalf of the government, certain of the private lands in the Giant Forest of the Sequoia National Park.

This act on the part of your Society I know will meet with the highest commendation from its great membership, because thereby you render to the Government of the United States and to all of its people a lasting service and in a sense create a monument to the honor of your Society itself.

The trees which your money, together with that appropriated by Congress, enable us to purchase are the oldest living things upon this continent. They are the original pioneers. To have them fall before the axe of the woodman would have been a lasting crime, reflecting seriously upon the people of our country.

It will be many centuries before they die, and throughout their life I hope it may be known that they were kept alive by the generosity and foresight of your people. We will be pleased to have placed on one of the trees of the grove a tablet of commemoration.

Cordially yours,
(Signed) FRANKLIN K. LANE.



Photograph by Gilbert H. Grosvenor

SOME OF THE BIG TREES IN SEQUOIA NATIONAL PARK

Their buttressed bases, their perpendicular ridges of bark, and their crown of branches make them seem indeed giant fluted columns, with nature-chiseled capitals, upon which rests the blue vault of heaven itself

Photograph by Lindley Eddy

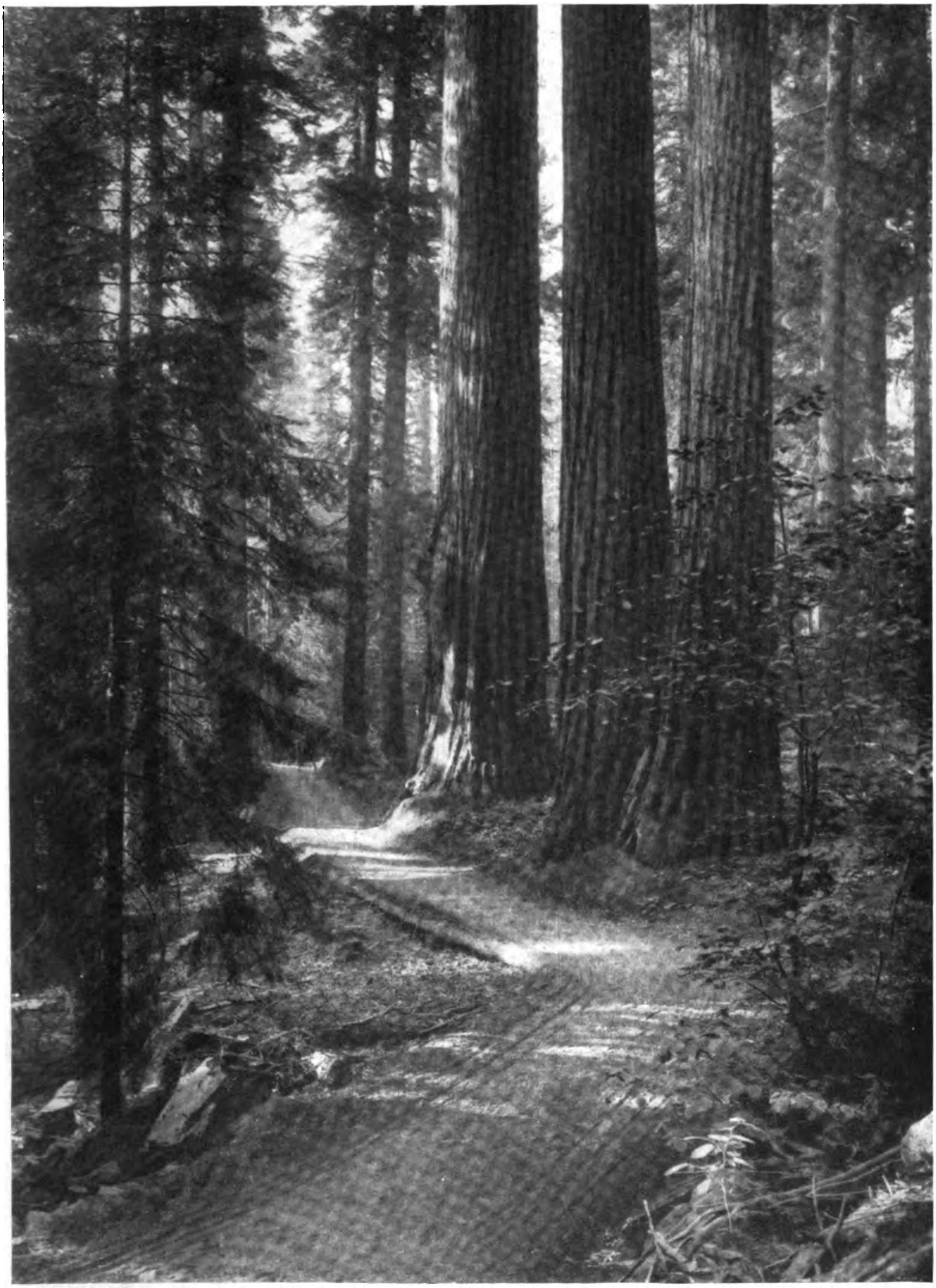
GIANT FOREST IN WINTER

The lightnings of ten thousand clouds have left them unharmed; the snows of a thousand winters have not broken them; the fury of ten thousand storms has been withstood; the insect foes of forty centuries have left them as uninjured as is the ocean itself by the storms that lash its bosom.

Photograph by Lindley Eddy

ONE OF GOD'S FIRST TEMPLES, IN THE GIANT FOREST

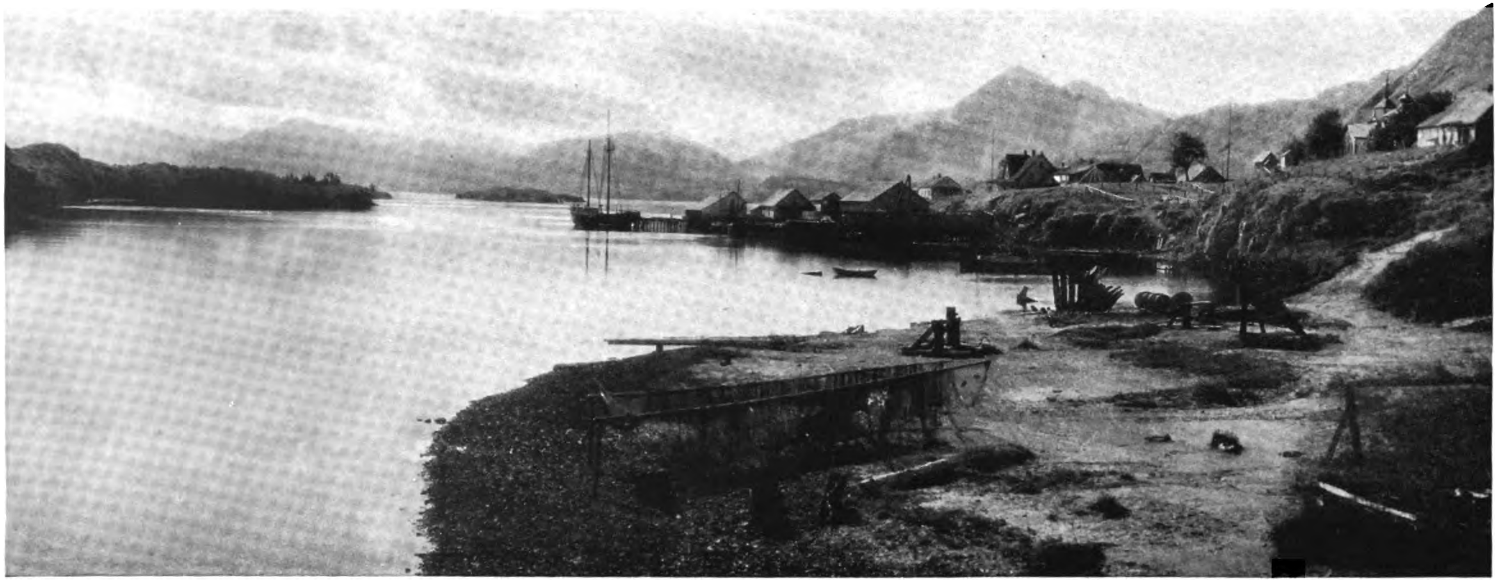
Dead indeed must be the soul of the man whose heart is not quickened, whose spirit is not moved to reverence, whose thoughts do not reach out and beyond, and whose inmost being does not look up through Nature to Nature's God, amid such surroundings as these!



Photograph by Lindley Eddy

IN THE HEART OF THE GIANT FOREST

"The big tree is Nature's masterpiece. It has a strange air of other days about it, a thoroughbred look inherited from the long ago—the auld lang syne of trees. . . . As far as man is concerned, it is the same yesterday, today, and forever—emblem of permanence."—JOHN MUIR.



Photograph by D. B. Church

THE WATERFRONT AT KODIAK

Although appearing on all the maps in heavy type, Kodiak is a sleepy village of four hundred people. It is nevertheless the center of a large and potentially important district.

THE VALLEY OF TEN THOUSAND SMOKES

National Geographic Society Explorations in the Katmai District of Alaska

By Robert F. Griggs, of the Ohio State University

Leader of the Society's Mount Katmai Expeditions of 1915 and 1916

THE eruption of Mount Katmai in June, 1912, was one of the most tremendous volcanic explosions ever recorded. A mass of ash and pumice whose volume has been estimated at nearly five cubic miles was thrown into the air. In its fall this material buried an area as large as the State of Connecticut to a depth varying from 10 inches to over 10 feet, while small amounts of ash fell as much as 900 miles away.

Great quantities of very fine dust were thrown into the higher regions of the atmosphere and quickly distributed over the whole world, so as to have a profound effect on the weather, being responsible for the notoriously cold, wet summer of that year.

The comparative magnitude of the eruption can be better realized if one should imagine a similar eruption of Vesuvius. Such an eruption would bury Naples under 15 feet of ash; Rome would be covered nearly a foot deep; the sound would be heard at Paris; dust from the crater would fall in Brussels and Berlin, and the fumes would be noticeable far beyond Christiania, Norway.

Readers of The Geographic will remember the accounts of the eruption by Capt. K. M. Perry and Dr. Geo. C. Martin, which appeared in the magazine for August, 1912, and February, 1913, respectively.

Fortunately the volcano is situated in a country so sparsely inhabited that the damage caused by the eruption was insignificant—very much less than in many relatively small eruptions in populous districts, such as that of Vesuvius, which destroyed Pompeii and Herculaneum. Indeed, so remote and little known is the volcano that there were not any witnesses near enough to see the eruption, and it was not until the National Geographic Society's expeditions explored the district that it was settled definitely which of several near-by volcanoes was really the seat of the disturbance.

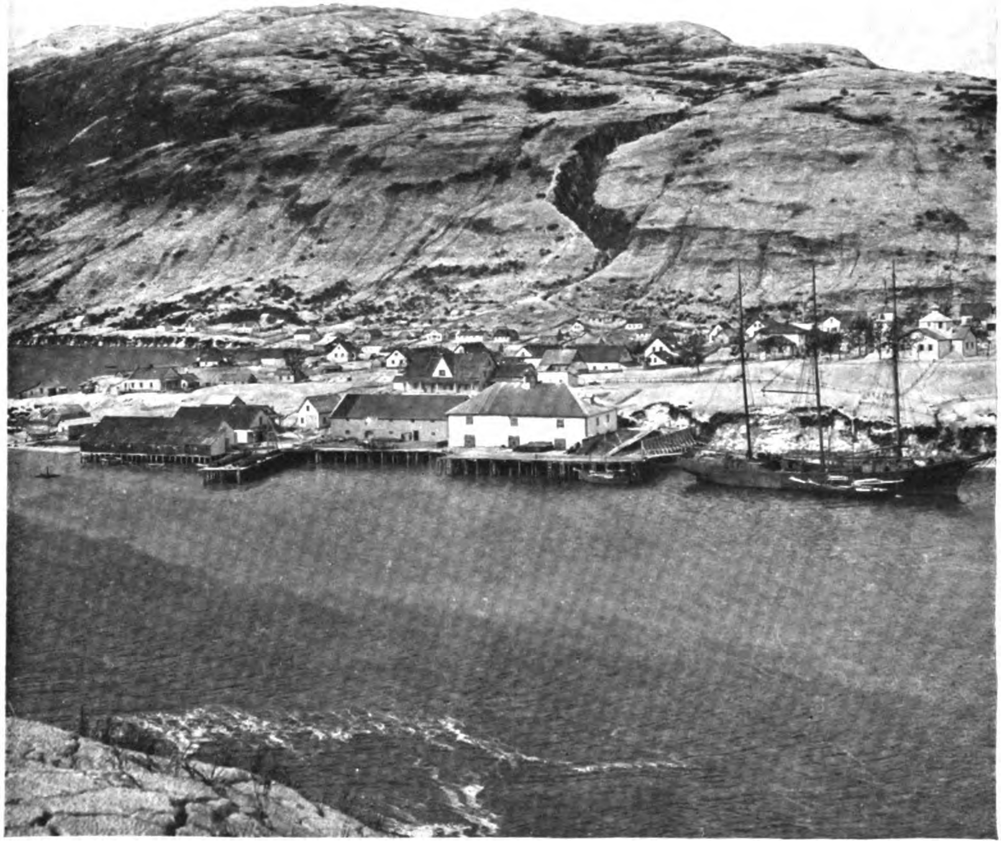
The most important settlement in the devastated district is Kodiak, which, although a hundred miles from the volcano, was buried nearly a foot deep in ash. This ashy blanket transformed the "Green Kodiak" of other days into a gray desert of sand, whose redemption and revegetation seemed utterly hopeless. When I first visited it, a year later, it presented an appearance barren and desolate. It seemed to every one there that it must be many years before it could recover its original condition.

THE ERUPTION WAS THE BEST THING THAT EVER HAPPENED TO KODIAK

What, then, was my surprise on returning after an interval of only two years to find the ash-laden hillsides covered with verdure. Despite the reports I had received, I could not believe my eyes. Where before had been barren ash was now rich grass as high as one's head.

Every one agrees that the eruption was "the best thing that ever happened to Kodiak." In the words of our hotel keeper, "Never was any such grass known before, so high or so early. No one ever believed the country could grow so many berries, nor so large, before the ash."

Were the title not preëmpted, Kodiak might have been called the "Emerald Isle" quite as well as Ireland. Its situation in the Pacific is indeed very similar to that of Ireland in the Atlantic, for it



THE TOWN OF KODIAK, ALASKA, AFTER THE ERUPTION OF KATMAI

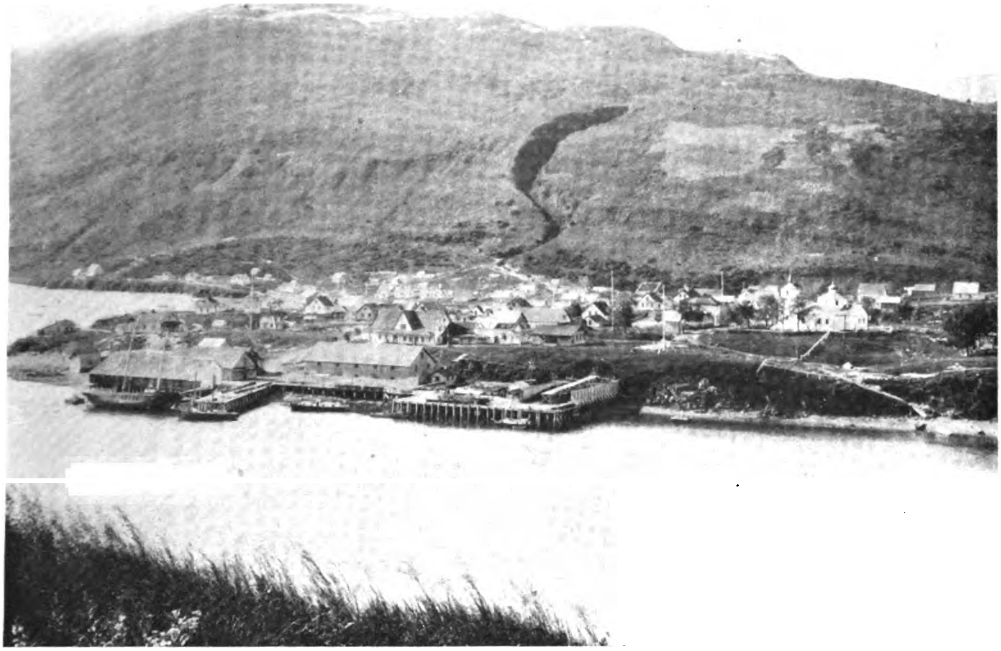
The town is 100 miles from the volcano. Note the heavy deposits of white ashes covering hillsides and town. Dust fell as far away as Juneau, Ketchikan, and the Yukon Valley, distant 750, 900, and 600 miles, respectively, from the volcano.

owes its climate, as does Ireland, to the tropical ocean current which bathes its shores. It is indeed a hundred and fifty miles farther north than Ireland, but this is more than counterbalanced by the protection from the Arctic Ocean afforded by the mainland.

Many people will no doubt be astonished to learn that the winter of Boston is far more severe than that of Kodiak, which more nearly resembles that of Washington, D. C. Indeed, an old lady, who had lived all her life in Kansas, found on returning there after two or three winters in Kodiak that the climate was almost unbearable and has been anxious ever since to return to the mild climate of Kodiak.

The eastern half of the island is occupied by a dense forest of spruce, whose trees reach a great size. Beyond the forest it is covered by a luxuriant grass land, which, in the abundance and fine quality of its hay and forage, surpasses any grazing lands in the United States proper and finds a parallel only in the "guinea-grass" pastures of the tropics.

At present this country is lying almost entirely neglected, but as Alaska passes from the stage of exploitation to that of development, these lands are destined to be much sought after for stock-raising.



Photograph by R. F. Griggs

KODIAK FROM THE SAME POSITION FOUR YEARS LATER, AUGUST 25, 1916

Kodiak enjoys the unique distinction of having been benefited by a volcanic eruption. The grass has come through the ash better than ever before. The whole hillside has come up to grass as abundantly as the foreground.

The eruption, of course, destroyed these pastures, so that the live stock nearly perished from starvation. The herd of the Government Experiment Station was shipped back to the States until it could be determined whether it might be possible to grow forage enough to support them on the ash-covered land. When they were shipped there was scant hope that they could ever be brought back again; but at the end of only two years the pastures had so far recovered that they were returned with full assurance that they could be maintained without difficulty (see page 22).

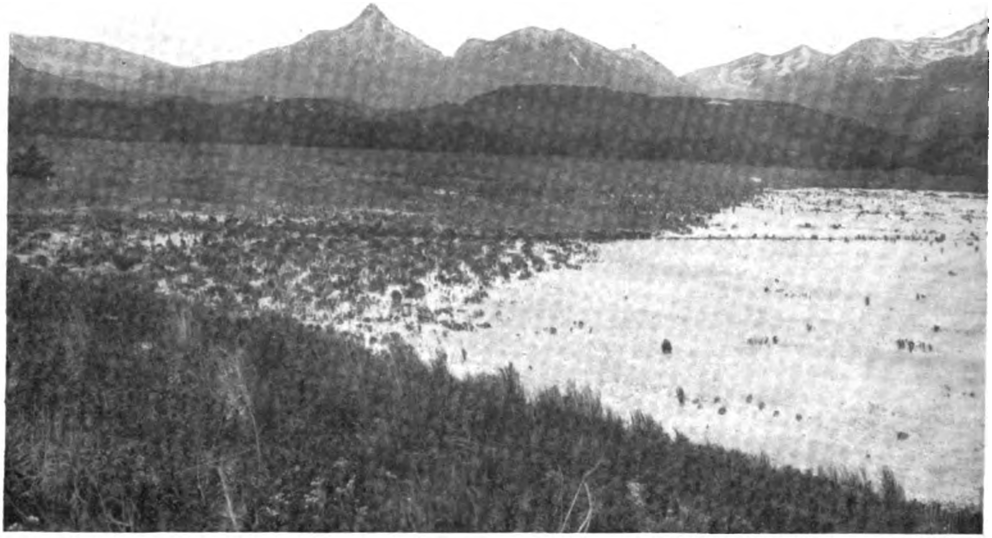
Places which three years ago were sand plains, with hardly a green leaf, have now come up into luxuriant meadows of blue-top grass. In some places the grass is still in scattered bunches, but in others it covers the whole ground in pure stands six or seven feet high. Where the meadows are completely grown up, the grass is finer than ever before (see page 18).

Of the berries, the most important is the salmon or "Molina" berry (*Rubus spectabilis*), which is allied to our blackberries and raspberries, but somewhat intermediate between them, having much the shape and appearance of a blackberry, but coming loose from the receptacle like a raspberry.

Salmon-berries were of course common before the eruption, but the ash provided such greatly improved conditions for them that the plants have made unusually vigorous growth (see page 24).

The ash also smothered and weeded out the smaller plants which formerly competed with the berries and apparently acts somewhat like a mulch, protecting the soil from excessive evaporation, for the berries did not suffer in the unprecedented drouth of 1915 as they are said to have done in less dry seasons before the eruption.

But although the country is in places clothed with vegetation as richly as be-



Photograph by D. B. Church

A PLOWED FIELD, PART OF WHICH WAS CULTIVATED JUST BEFORE THE ERUPTION

The line between cultivated and fallow ground remains perfectly distinct after four years. Cultivation just before the eruption destroyed most of the weeds and no new ones have been able to start. The uncultivated land has grown a mass of fireweed, whose bloom is conspicuous for miles—illustrating the importance of residual vegetation.

fore, it must not be supposed that the old order of things has completely returned. The new vegetation is not altogether the same as that which was destroyed. It is true that the species are the same as those dominant before the eruption, but the smaller species which formerly grew with the dominant plants were unable to pierce the ash blanket and were smothered. This is particularly true in the bogs or tundras, which formerly covered considerable areas. Even four or five inches of the ash was fatal to the bog plants, whose extermination was so nearly complete that it is difficult to find even individual survivors.

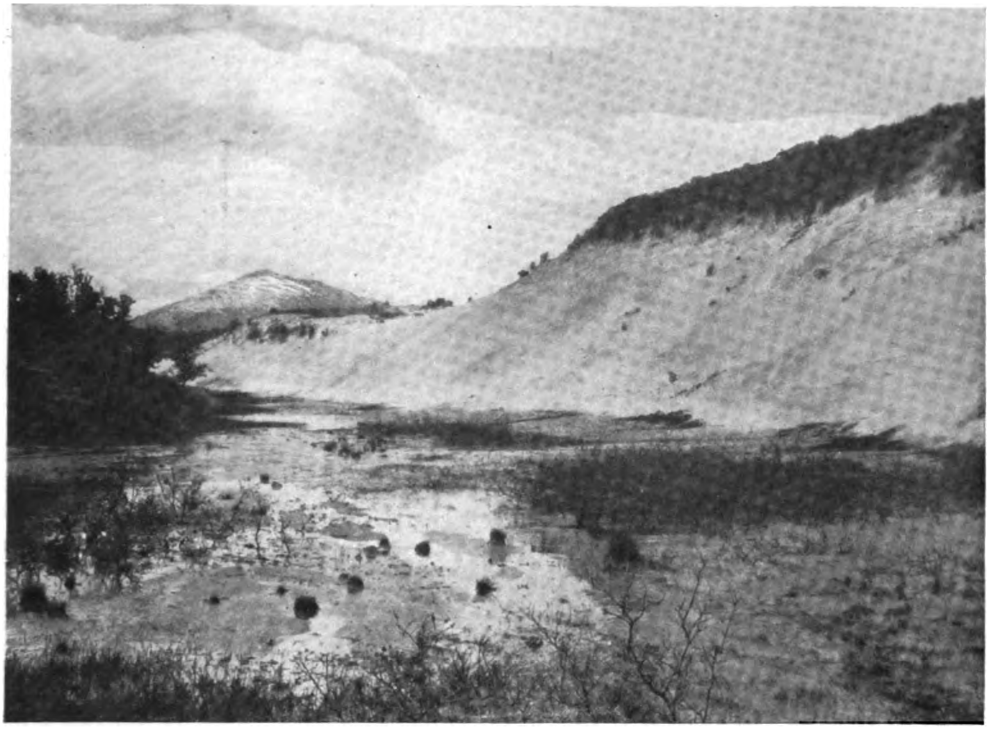
Thus while the salmon-berries and high-bush blueberries are finer than ever, the low-bush blueberries and cranberries are entirely lacking.

The exposed mountain tops were formerly covered with an alpine heath containing many of the same species that grew in the bogs, and to them the eruption was similarly fatal. While the sides of the mountains are covered with verdure, their tops are largely barren wastes covered with ash drifts and the skeletons of the former vegetation.

THE NEW VEGETATION CAME FROM OLD ROOTS

One would have supposed from the appearance of the country at the end of the first season after the eruption that practically all plants except the trees and bushes had been destroyed, and that revegetation must be due to new seedlings started on the ash. Such, however, is not the case. Excavation of the root systems of the new plants shows that they are old perennials which have come through the ash from the old soil.

Where cultivation destroyed the weeds, the land is still absolutely bare except for an occasional weed which escaped destruction by the plow. The fallow ground, on the other hand, is a mass of fireweed whose bloom is conspicuous for miles (see the picture above).



Photograph by D. B. Church

A DUNE OF WIND-BLOWN ASH: WOMEN'S PENINSULA, NEAR KODIAK

This blowing ash lodges behind any obstruction, like snow. Among the weeds at the edge of cultivated fields and along the fence rows drifts two feet deep have been formed. On mountain tops and in other places where there is no vegetation to catch the blowing ash it forms dunes like those on a seashore.

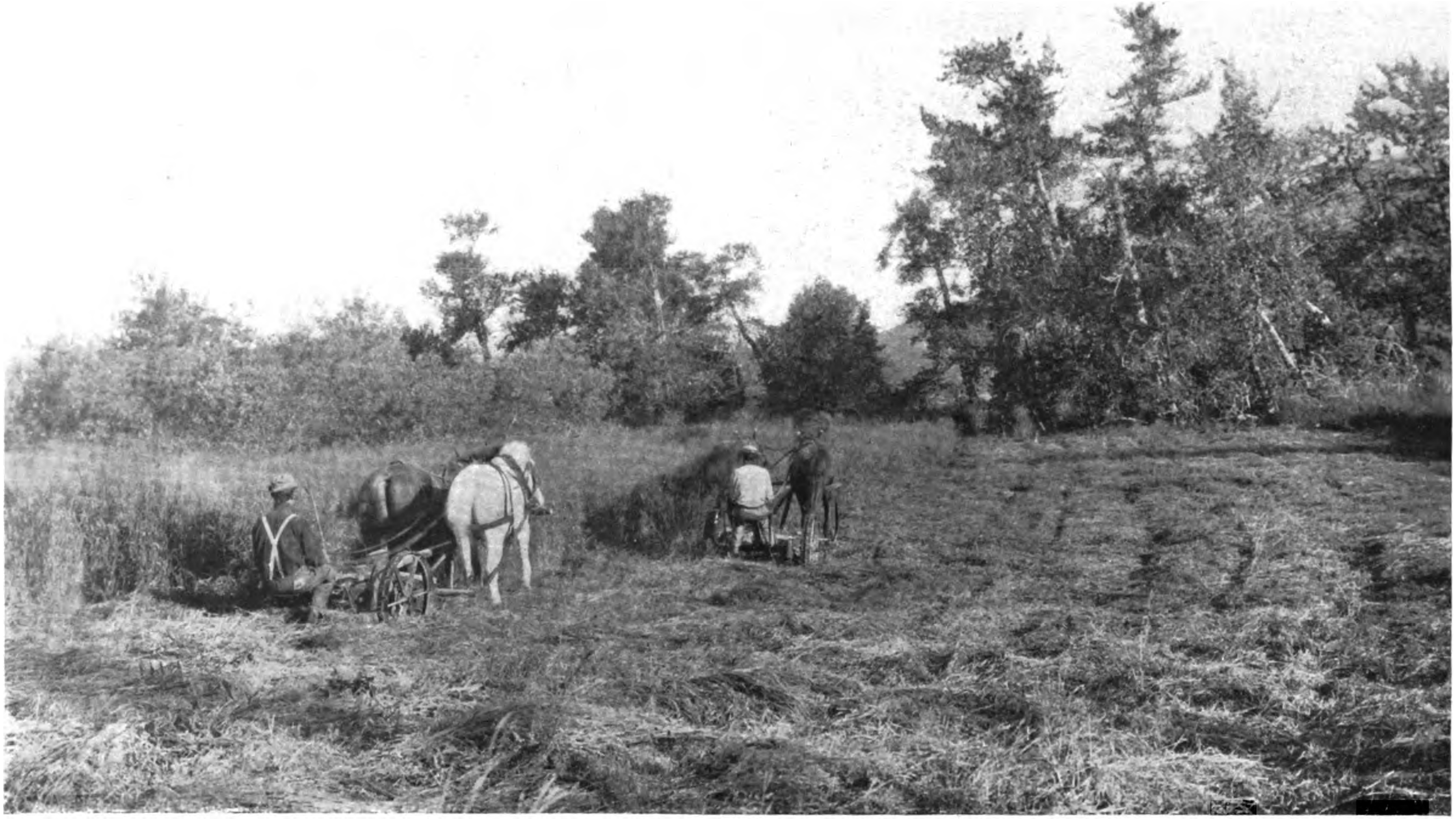
THE SAND BLAST

While these weeds protect the surface of the fallow ground, ash from the bare surface is picked up in clouds by every wind, forming a sand blast which is very hard on the few plants that have persisted. All of them are lopped over before the wind, and their lower leaves are cut to pieces by the sharp sand or are buried beneath it.

The particles of ash are all very sharp, sharper than ordinary sand. Indeed, volcanic ash forms the basis of such scouring agents as "Old Dutch Cleanser." The ash is also finer and much lighter than shore sand, so that it is more easily carried by the wind. Consequently this sand blast is a very different thing from the sand drift common among beach dunes. Standing before it is like facing a blast of "Old Dutch Cleanser" in one's face and is at times exceedingly unpleasant (see also page 27).

One might suppose that the frequent rains which characterize the climate of the region would have the effect of checking the sand blast, but it is surprising how quickly it starts up again after the rain stops. We found once, for example, after a day of soaking rain, that the sand was blowing early the next morning, although only the very surface had dried off.

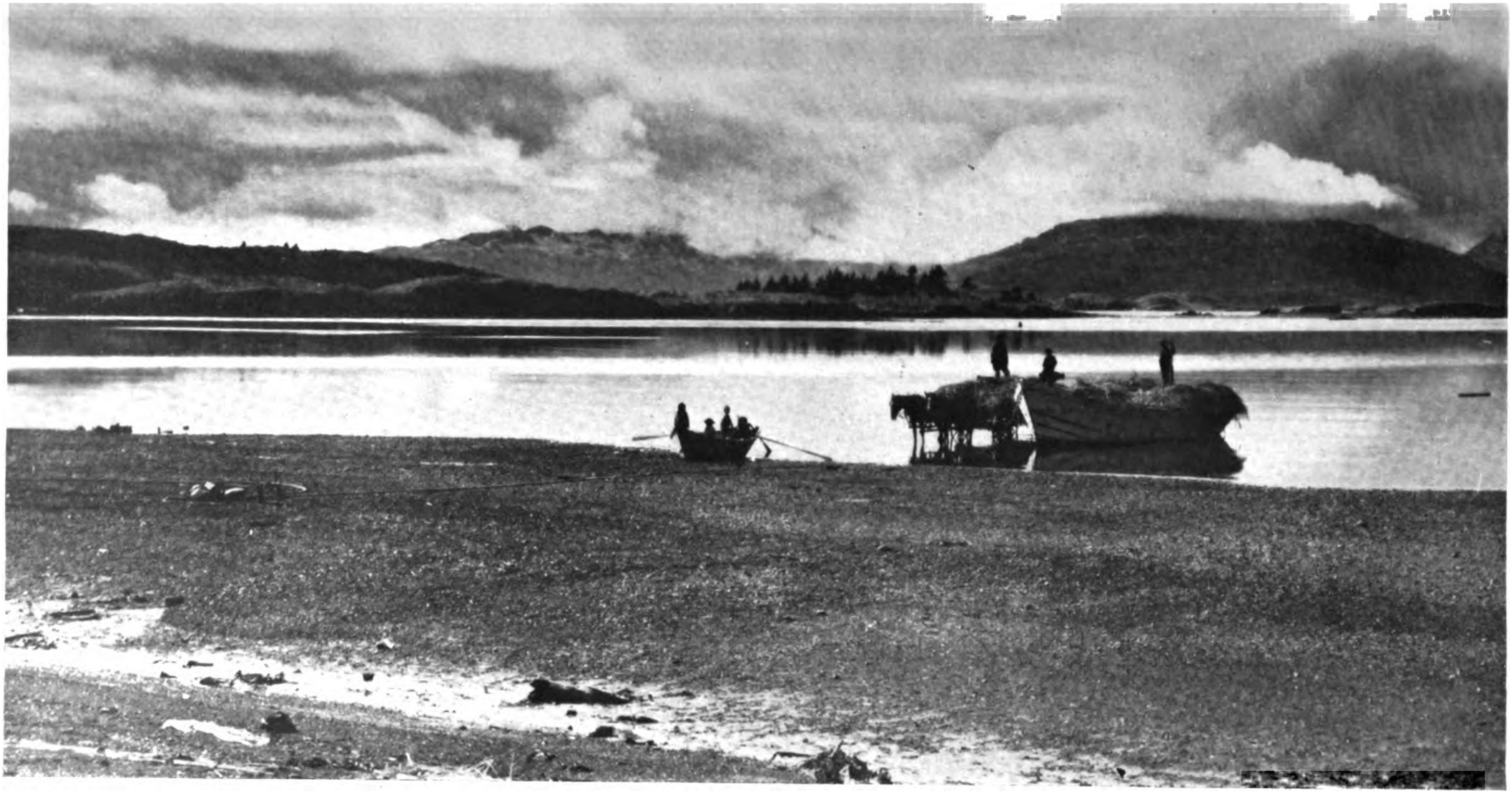
It was of the utmost importance for the welfare of the country that the ground be covered with vegetation, regardless of the value of the plants making the cover. Of all the native plants, the one which could grow through the deepest ash and, once through, could spread most rapidly on the bare surface was the field horsetail (*Equisetum arvense*). This is a common weed of railway embankments and such places with us. In Kodiak scattered individuals were frequent before the eruption, though they formed no noticeable element in the landscape. But it has come up everywhere through



Photograph by D. B. Church

CUTTING NATIVE BLUE-TOP HAY NEAR KODIAK (SEE ALSO PAGE 13)

This hay comes up through the ash, which, in much of this land, was washed off the hills, covering the bottoms a foot and a half deep



Photograph by R. F. Griggs

BRINGING IN HAY FOR THE EXPERIMENT STATION AT KODIAK

"Were the title not preëmpted, Kodiak might have been called the 'Emerald Isle' quite as well as Ireland. Its situation in the Pacific is indeed very similar to that of Ireland in the Atlantic, for it owes its climate, as does Ireland, to the tropical ocean current which bathes its shores" (see text, page 13).

the ash and spread out on the surface, forming in many places a beautiful greensward, where hardly anything else can come through.

Its present abundance contrasts so greatly with its former state that, according to Mr. Snodgrass of the Experiment Station, some of the natives thought that it must have "come with the ash," and could only be convinced of the contrary when he dug out the rootstocks and showed that they originated in the old soil beneath the ash. While a deposit of 10 or 12 inches would have been fatal to most plants, the horsetail in many places came through from 30 to 36 inches of ash.

CONTRAST BETWEEN KODIAK AND THE MAINLAND

Nothing could offer greater contrast to the rehabilitation of Kodiak than the condition of the country on the mainland near the volcano. The village of Katmai, which was the nearest settlement affected, is in an altogether different state from Kodiak. While Kodiak is rejoicing in the prospect of a prosperity beyond that of former days, Katmai is sinking deeper into desolation.

In fear of their lives, the people of Kodiak deserted their town for a few days; but the natives of Katmai, who, fortunately, were away fishing at the time of the eruption, were never allowed to return to their homes, but were removed in a body and settled in a new town built for them by the government. The grass has returned to cover the hillsides of Kodiak as richly as ever before, but the former luxuriance of Katmai Valley is replaced by a barren waste, whose few spots of green serve only to heighten the weird effect.

OUR TRIP TO THE MAINLAND

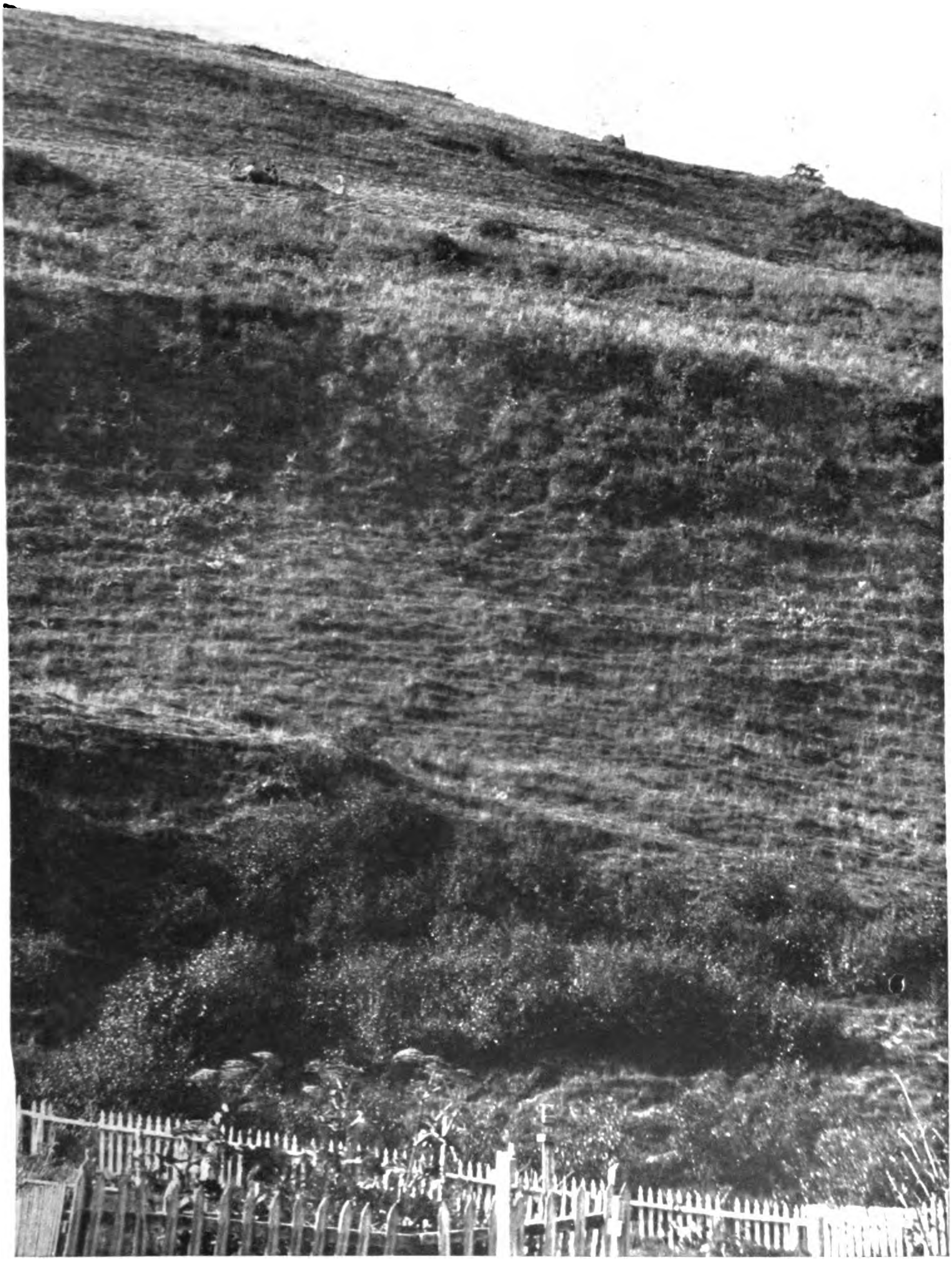
It is not to be supposed that Katmai village was at all near the crater, however. Situated at a distance of 25 miles, it was five times as far from the volcano as was Pompeii from Vesuvius or St. Pierre from Mt. Pelee. More important still, Katmai village was not in the main track of destruction, but lay at one side, near the edge of the ash fall.

To make the trip to Katmai, we secured the services of Mr. Albert Johnson, of Uyak, who undertook to land us at Katmai and come and take us off again when we had finished our exploration. Mr. Johnson proved himself not only trustworthy, but a first-class seaman and a man of very good judgment as well, all of which qualities are essential in one who would successfully navigate the dangerous waters of Shelikof Strait, which lies between Kodiak Island and the mainland, for it has justly acquired the reputation of being one of the most treacherous pieces of water in the world. There were three of us in the party: Mr. B. B. Fulton, Entomologist of the New York Experiment Station, who accompanied me throughout the summer, a most efficient and loyal assistant, and Mr. Lucius G. Folsom, manual-training teacher of Wood Island, near Kodiak, who by his resourcefulness and never-failing optimism helped to carry the expedition by many an obstacle which might otherwise have turned us back.

A WEIRD, FANTASTIC SCENE

The scene which met our eyes as we entered Katmai Bay was fantastic and weird in the extreme. Quantities of fresh pumice were floating about as though thrown out by a recent eruption. The sun was shining brightly, but the sky was filled with haze from the volcanic dust in the air, which increased the ghastly and mysterious appearance of the desert landscape and veiled the upper reaches of the valley and the volcanoes we hoped to visit.

As soon as we landed, we began to see evidences of the great flood, which was to be the source of much concern to us. The flats were everywhere covered ankle deep with soft, sticky mud. We were unable to find any place to pitch our camp between the precipitous mountain sides and the flooded flats, except a mound of avalanche detritus, which we felt was too dangerous, for boulders and small avalanches were rolling down the mountain sides all around us every few minutes. We finally reached a bed of pumice which had been floated into place in a grove of poplars. Although there was very wet mud only a few inches below it, the surface was fairly dry. We were in con-



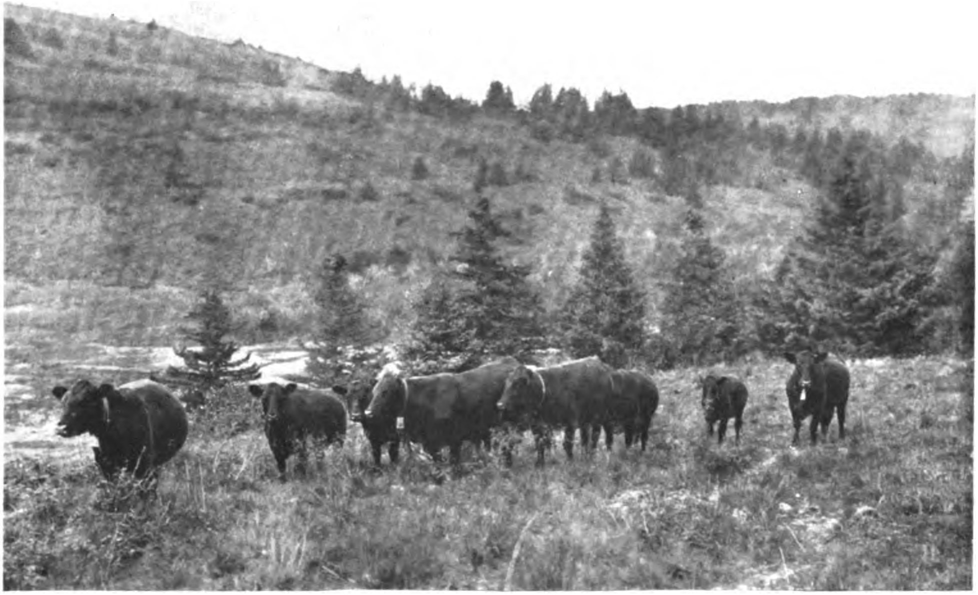
Photograph by R. F. Griggs

ROLLING HAY DOWN THE MOUNTAIN SIDE AT KODIAK

The native method of harvesting hay is certainly one of the most curious bits of agricultural practice to be found anywhere. The hay is cut high up on the mountain side, done up into bundles in fish nets, and sent tumbling end over end to the bottom, there to be picked up and carried home, oftentimes in boats.

SHEEP FOR STOCKING A SETTLER'S RANCH BEING LANDED ON KODIAK ISLAND

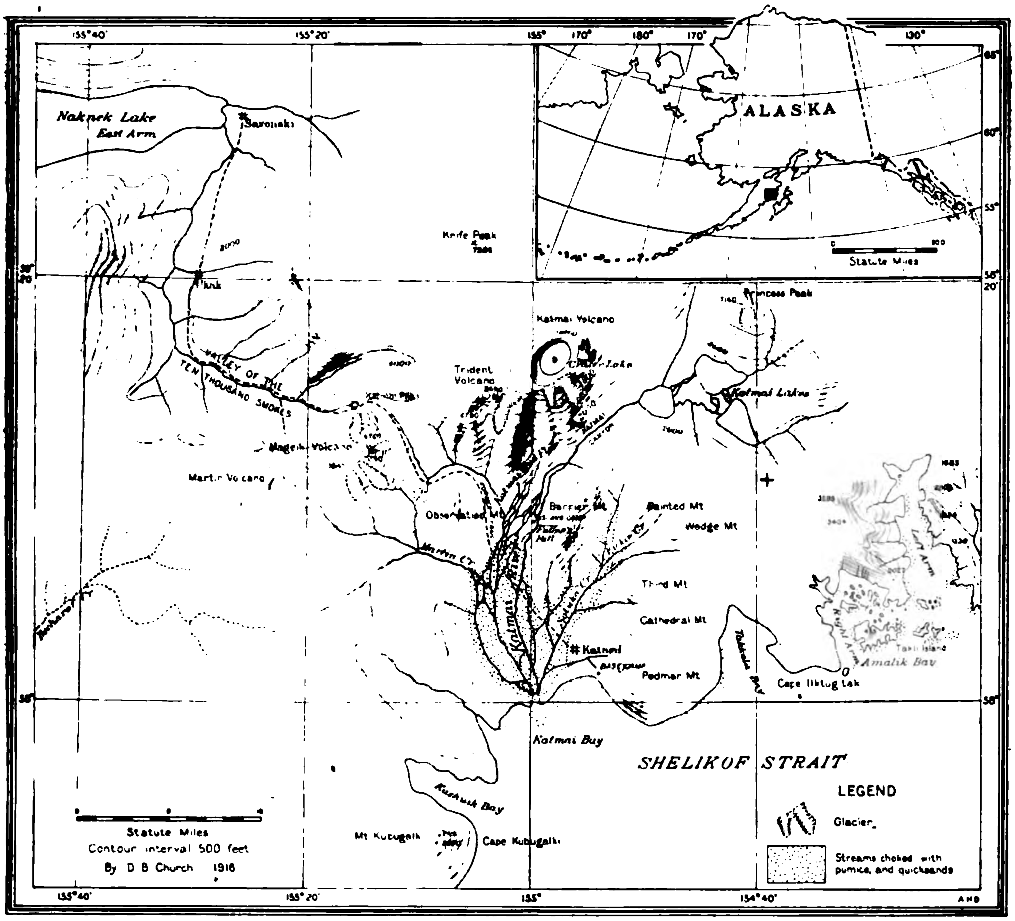
At present this country is lying almost neglected, but as Alaska passes from the stage of exploitation to that of development, these lands are destined to be much sought after for stock-raising.



Photographs by R. F. Griggs

SLEEK GALLOWAY CATTLE BELONGING TO THE EXPERIMENT STATION AT KODIAK

After the eruption the station herd had to be taken to "the States" for the first two years; but their pastures made such a remarkable recovery that they were soon returned. A stranger would hardly suspect that this country was buried under a foot of ash only four years ago.



Naknek Lake
East Arm
Savonoski
Knife Peak
Katmai Volcano
Crater Lake
Trident Volcano
Valley of the Ten Thousand Smokes
Mageik Volcano
Martin Volcano
Observation Mt
Baked Mt
Broken Mt
Falling Mt
Martin Cr.
Katmai River
Painted Mt
Wedge Mt
Third Mt
Cathedral Mt
Katmai
Pedmar Mt
Princess Peak
Katmai Lakes
Cape Ilktugitak
Amalik Bay
Katmai Bay
Kashvik Bay
Mt Kubugakli
Cape Kubugakli
SHELIKOF STRAIT
ALASKA
Statute Miles
LEGEND
Glacier
Streams choked with pumice and quicksands
Statute Miles
Contour interval 500 feet
By D B Church 1916
155°40'
155°20'
155°
154°40'
58°20'
58°

SKETCH MAP OF KATMAI VOLCANO AND VICINITY

stant fear, however, that the water would suddenly rise in the night and drive us out.

The desolation of the country beggars description. All of the trees had perished except such as were favored by some special circumstance, such as proximity to the protecting mountain sides. In one way the trees and bushes suffered more seriously than the herbage, for wherever the ground had been swept bare of ash the old roots of the herbage sent up new shoots, so that in a few fortunate spots flowers were blooming in their pristine profusion.

But where the ash remained to the depth of a foot or more, the ground under the dead trees was absolutely bare. No vegetation had come through cracks, as at Kodiak, and indeed such cracks may not have been formed because the deposit here is much coarser grained.

Under the mountain sides, where a few remnants of the forest remained alive, different species had suffered in different ways. The only large trees were the balsam poplars. All of the growing parts and ordinary buds of these had been killed, but some of the dormant buds, buried deep in the bark, had survived and grown out into short, bushy branches which gave the trees a most bizarre appearance.

The alder, which is the most characteristic Alaskan bush, everywhere was simply exterminated. For our purposes this was somewhat fortunate, for it was easy to break our way through the branches of the dead thickets, which otherwise would have made traveling difficult. Not a single live sprig of alder was seen until after we had explored considerable country, and then only two or three very small

Photograph by M. G. Dickman

A BRANCH OF SALMON-BERRIES, INDICATING THE PROFUSION OF WILD BERRIES AT KODIAK SINCE THE ERUPTION

These berries are somewhat like the persimmon, in that they have an astringent taste that disappears only when they are dead ripe. They have, however, a distinctive and extremely delicate flavor, and when served with sugar and cream equal or surpass any other berry with which the author is acquainted.

shoots were seen coming up from the roots.

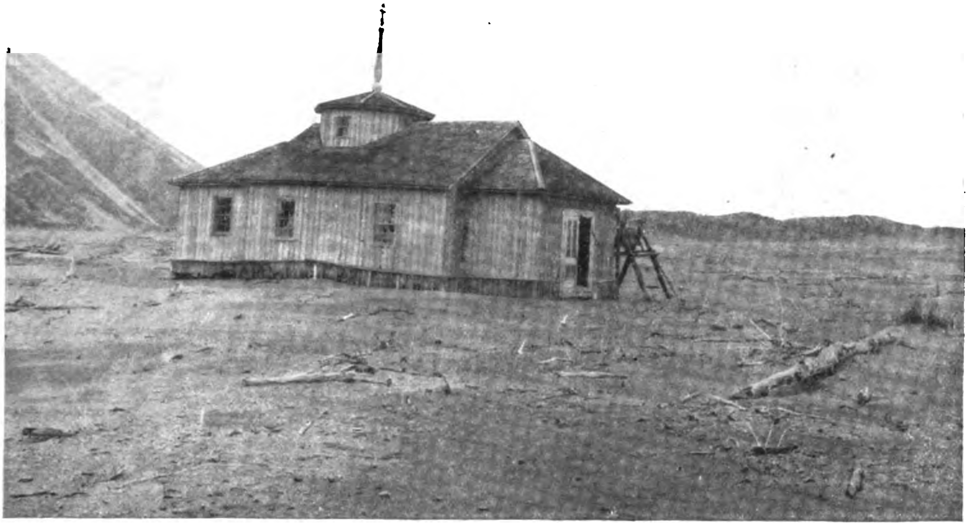
When we arrived at the village, the magnitude of the flood was impressed on us as it could not be in the brush-covered dunes. The church where the people had worshiped undisturbed for years was standing in a sea of liquid mud. The high-water mark could be plainly seen across the front about five feet and a half from the ground.

Some of the native houses were filled solid full to the eaves with pumice. Some had been completely submerged, as might be seen by the stranded pumice which had floated onto their roofs. The roof of one had been floated away from the body of the house and lay at a little distance. The church had evidently floated free from its foundation, for the high-water marks across it were somewhat diagonal (see opposite page).

A RIVER FIVE MILES WIDE AND FIVE INCHES DEEP

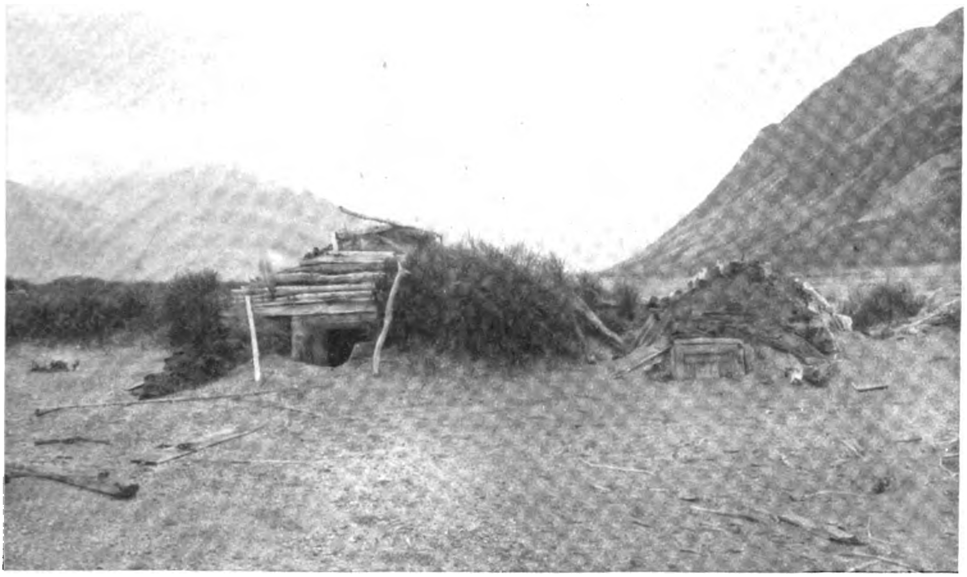
The river, whose former bed was close by the houses, had subsided from the flood condition enough to show its character. Where formerly was deep water was now a maze of quicksands and intertwining streams. So much material had been dumped into it that the level of its bottom was several feet above its former channel. We could see no indication of the farther bank. Somewhere out beyond the range of our vision were one or more main channels in which a formidable volume of water was running, as we later found to our cost. But except for these shifting main channels it could be described as five miles wide and five inches deep.

We ventured far out from shore to see whether it would be possible to cross, but



THE GREEK CHURCH AT KATMAI VILLAGE STANDING IN THE MUD AND WRECKAGE LEFT BY THE GREAT FLOOD

This part of Alaska is still "Russian America." Russian is the language of the common people, and the Greek Church is the only religious institution.



Photographs by D. B. Church

A "BARABARA" BURIED BY THE PUMICE BROUGHT DOWN BY THE GREAT FLOOD: KATMAI VILLAGE

These huts, comparable to the sod-houses of the plains, are well adapted to afford protection from the intense gales of winter

Photograph by R. F. Griggs

A FOX CUB DRINKING CONDENSED MILK: KODIAK

Foxes are abundant in this region, and it was not intended to establish a precedent by feeding this one condensed milk, especially during these days of the high cost of living. Other foxes must continue to "rustle their own grub."

soon found ourselves miring in the quicksands, so that we were glad to hurry back to terra firma.

The condition of this river is undoubtedly the most serious obstacle to the exploration of the district. While the bottom is too treacherous to travel afoot, especially under a pack, the greater part of it could be easily traversed with snowshoes or some similar contrivance, which, however, would be a fatal encumbrance in the swift currents of the deeper channels. A boat might be used were it not for the fact that the current is too strong for rowing, the bottom is too uncertain for poling, and there is no place to land.

MYSTERIOUS SOURCE OF FLOOD

Conditions at the village greatly increased our respect for the magnitude of the flood, but failed to enlighten us as to its cause. The volume of water had been tremendous, considering the size of the watershed, for although the main stream is less than forty miles long and has a steep gradient through much of its course, the water had filled the whole valley, six miles wide, many feet deep. We knew of no general storm which could have caused any such unusual quantity of rain.

Our first thought was that the spring tides, which had just passed, had overwhelmed the land; but a little examination showed that the high water had been far above any tide-mark. We then thought of volcanic rains up the valley, for we had no knowledge of the condition of the volcanoes.

But the examination of the village was reassuring in one respect: Although there could be no doubt but that the flood had culminated only a day or two before our landing, everything indicated that it was a very exceptional event.

EXPLORING IN A DUST-STORM

When we awoke the next morning we found that a westerly gale which had started during the night had picked up the fine dust from the mountains until it

Photograph by R. F. Griggs

LANDING ON KATMAI BEACH

Only in perfectly calm weather can the landing be undertaken, the water being normally very rough

had changed the haze of previous days into a terrific dust-storm. The dust was so thick that it obliterated everything beyond the immediate vicinity. It permeated everything about our camp. We were extremely worried lest it should get into our cameras and ruin all our films.

It matted our hair so that we could not comb it for days. The sharp particles caused acute discomfort in our eyes, and at first we were afraid that it might do us permanent injury; but after a time the irritation stimulated an increased flow from the tear glands, which helped to keep the eyes washed out.

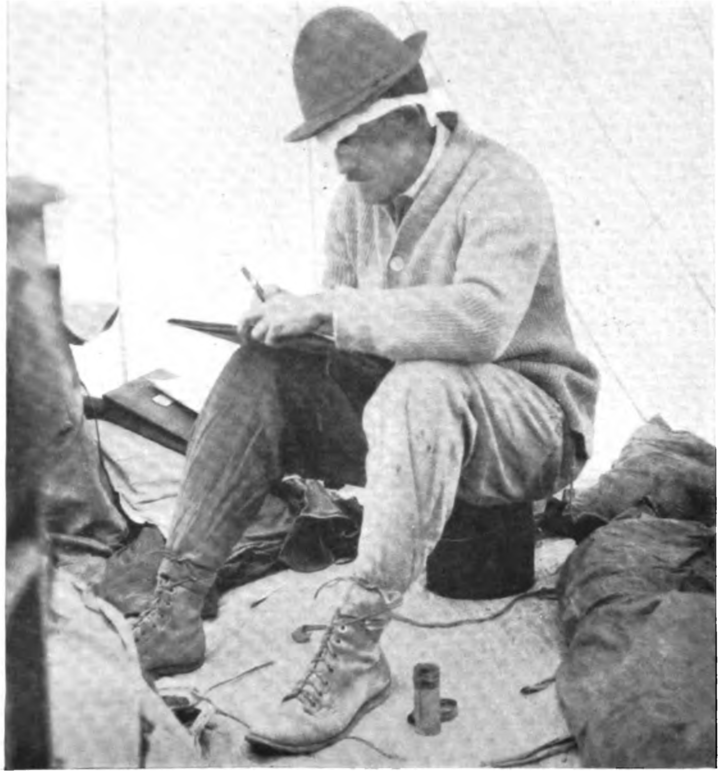
During this day of dust-storm we explored the valley as far as Soluka Creek. The dust heightened the already weird character of the landscape, giving it an indescribably unearthly appearance. The effect was much like that of a heavy snowstorm. This was increased by the outlines of the bare trees. Indeed, so keen were the visual sensations of a snowstorm that every little while I would realize with a start of surprise that I was not cold (see also page 17).

About noon we fell to speculating on the state of the weather above the dust-storm and were surprised on searching the sky at being able to find the sun, whose disc was just visible, a pale white, something like the moon in daytime, but fainter.

It would be quite impossible adequately to describe our feelings on this day, as we groped our way forward into new country, utterly different from any we had ever seen before. Fortunately the loose sandy surface of the ash everywhere held our tracks, so that even without our compass we could hardly have become lost.

FOLLOWING A BEAR TRAIL

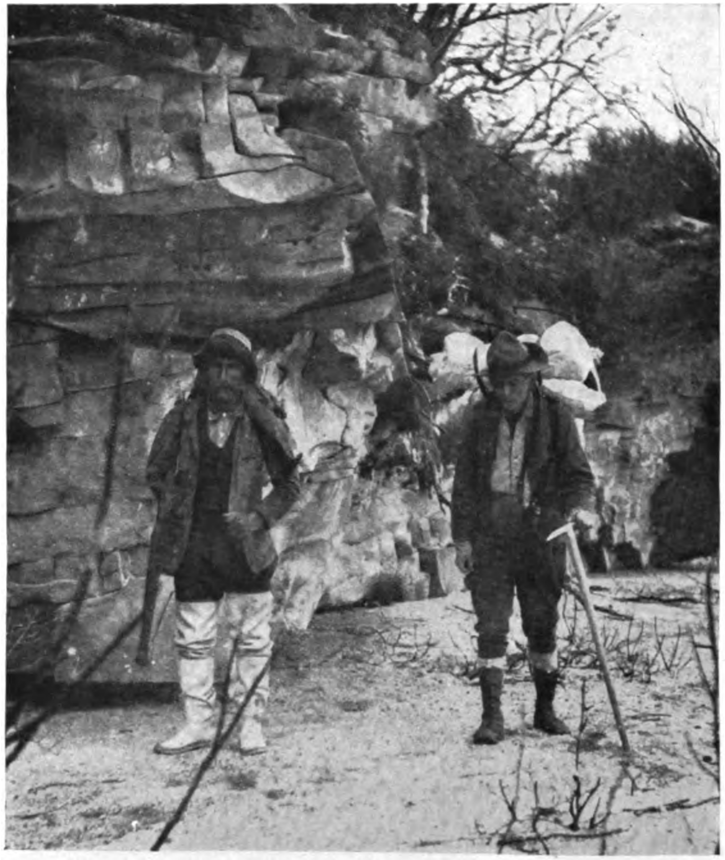
We followed all the way a well-worn bear trail which skirted the foot of the mountain, finding that the bears had selected the easiest going to be had. It was very noticeable that the bear trails, except for an occasional side branch into the mountains, all ran lengthwise up and down the valley. They had made no attempt to cross the river. Apparently



Photograph by D. B. Church

WRITING IN THE TENT DURING THE SAND-STORM

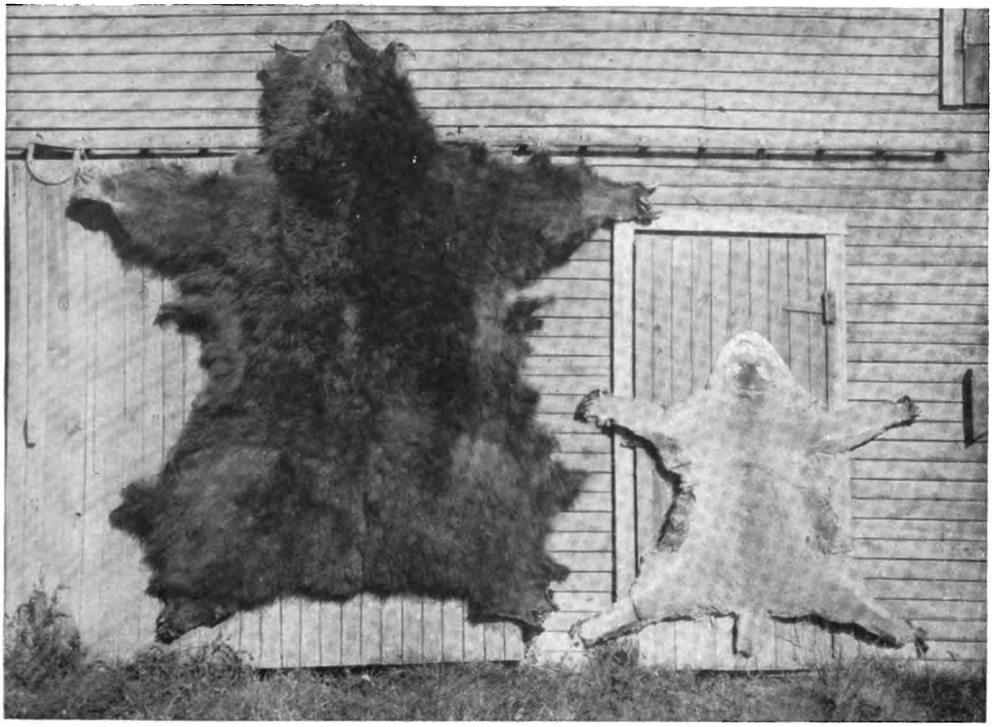
While outside a piece of pumice lodged in my eye with such force that it had to be dug out with forceps, causing considerable discomfort for a couple of days (see page 26).



Photograph by L. G. Folsom

CHURCH AND WALTER ON THE TRAIL

The bears of this region are only slightly inferior in size to the Kodiak bear, the largest carnivorous animal in the world, and the members of the expedition, following a well-worn bear trail, feared meeting one. After several days on this trail without encountering anything but tracks, they began to fear lest they should *not* see one.



Photograph by R. F. Griggs

A KODIAK BEAR SKIN

Although by no means a large skin, as Kodiak bears go, comparison with the mountain-lion skin to the right shows how much larger the bear is than the panther

they had learned by experience not to try that.

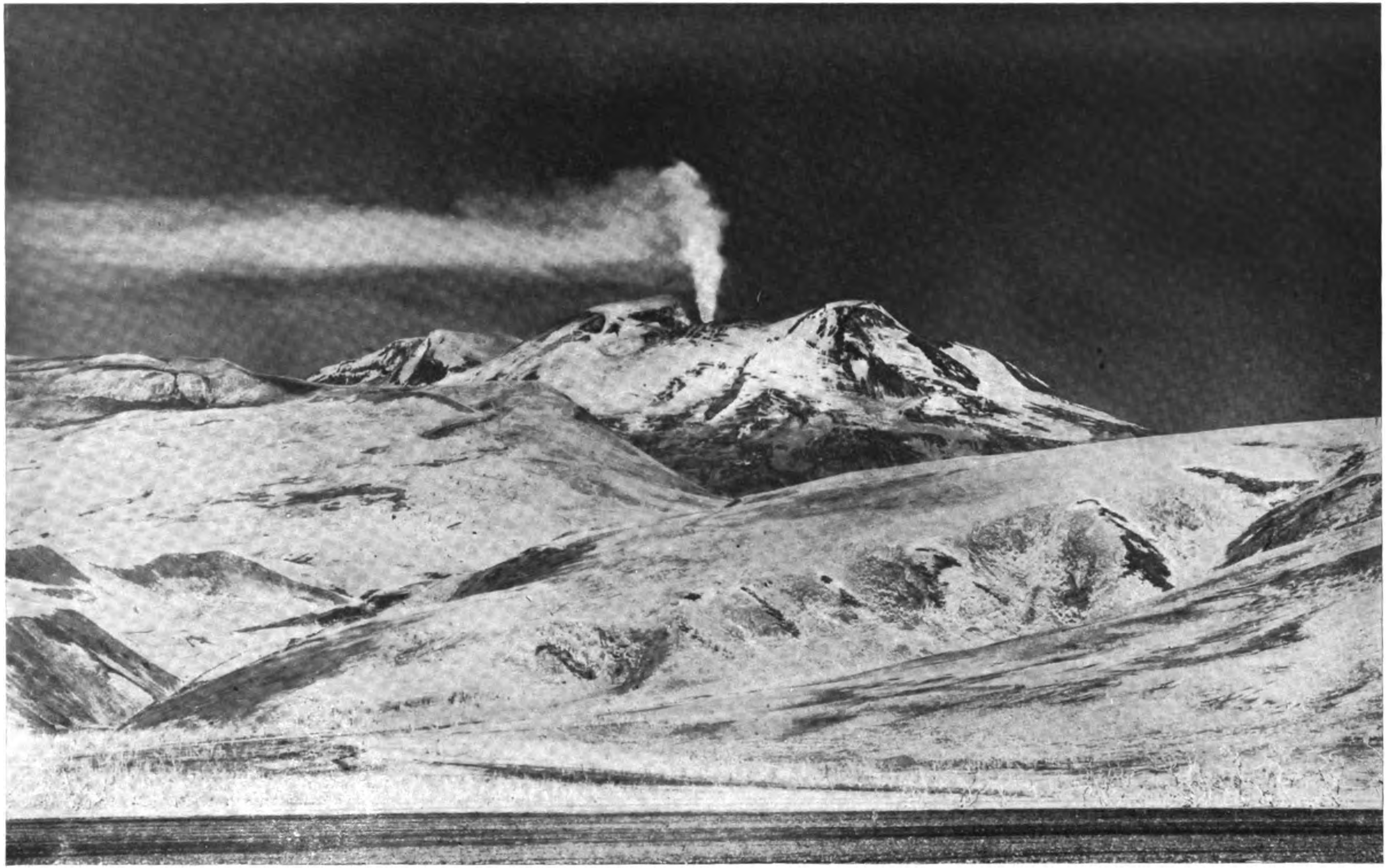
Everywhere we kept a sharp lookout for bears, but, although we found a great many tracks belonging to at least a half-dozen sizes of bears, we did not see any of them. At first we were rather concerned for fear that we should come upon one suddenly, for in such a barren country we could not but believe that they must be hungry, and in any event a she bear with cubs is an ugly customer to settle with on short notice. The bears of this region are only slightly inferior in size to the Kodiak bear, which is the largest carnivorous animal in the world, so large as to make a full-grown grizzly look like a cub by comparison.

Later, after we had traveled many days without seeing one, we began to be as much concerned for fear we should not see a bear as we had been at first for fear we should.

They doubtless saw us many times, but were shy and kept out of our way. Indeed, once we thought a mother and cubs who had been advancing toward us had turned and retreated on our approach, for we found where their tracks, apparently just made, suddenly reversed and turned up the valley. We often found on returning over one of our trails that a bear out of curiosity had tracked us for some distance, and when we saw beside our own footprints enormous bear tracks measuring nine by fourteen inches we could not avoid having somewhat of a creepy feeling. Some of the bear tracks were so clear that we could see the marks of the creases in their soles, and had we been palmists doubtless we could have read the fortune of the possessor or at least have learned his disposition.

OTHER SIGNS OF ANIMAL LIFE

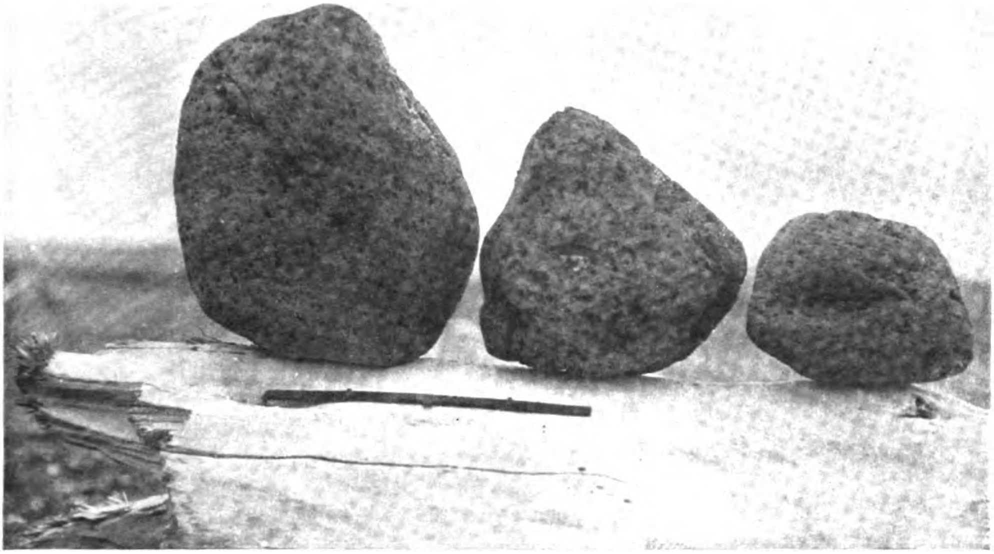
Besides bears, foxes were very abundant, and we could frequently get their scent as we traveled along. Wolverines were also frequent travelers along the trails we used. One of the latter must have passed close beside us one day as we climbed a mountain, for we found his



Photograph by D. B. Church

MOUNT MAGEIK FROM THE UPPER VALLEY

"Standing square across the head of the valley, we saw Mount Mageik, its magnificent three-peaked snow-cap brilliant in the sunshine. From a small crater east of the central peak issued a column of steam, which, although clearly visible for fifty miles out to sea, appeared diminutive in comparison to the bulk of the mountain" (see text, page 33).



Photograph by R. F. Griggs

FLOATING ROCK—LUMPS OF PUMICE PICKED UP ON THE BEACH: KATMAI BAY

The foot rule gives the scale. The violence of the explosion was so great that all the pumice was blown to small bits. There were few pieces more than six inches in diameter from Mount Katmai. These came from one of the subordinate vents in the Valley of the Ten Thousand Smokes.

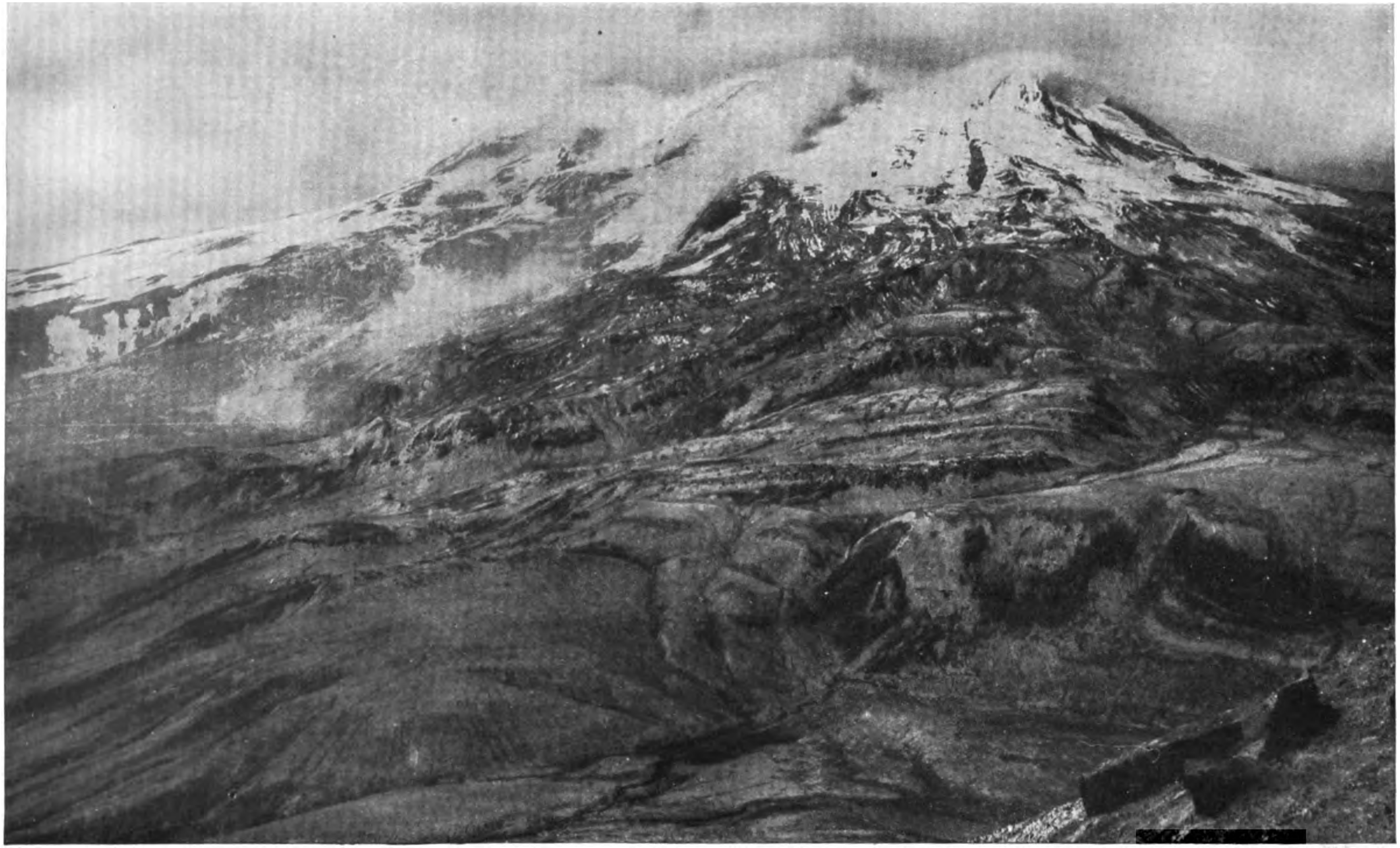
fresh tracks on the pass at the top, and on returning followed his trail across our own. How he managed to hide from us in a country so destitute of cover is not clear, but probably he had ample notice of our approach and secreted himself somewhere behind a rock. Of the smaller mammals we saw not a sign, although the surface of the ash preserves tracks to a remarkable degree.

We were surprised to find a few small fish like minnows in the river, for with the ash fall all the streams were entirely filled up for a time, and even the river must have been nearly choked. There was no evidence, however, anywhere of salmon, which must have formerly entered the river in large numbers.

The means of subsistence of so many large animals was very much of a mystery to us; yet they must have found something to eat, for they were evidently at home and not merely passing through. Moreover, if they had not found food they could easily have migrated, for a journey of 20 miles to the westward would have taken them into a country rich in berries, mice, ground-squirrels, and marmots, besides large game such as caribou, and, most important of all, in the summer, salmon in the streams. The only evidence we could secure in this matter beyond our own conjectures was obtained from the character of the bear droppings, which much resembled horse dung, as though the animals had been living on grass. The quantity of grass obtainable, however, seemed entirely inadequate to feed even one bear.

FIRST VIEW OF THE VOLCANOES

On the 16th, having previously broken the trail as far as Soluka Creek, we packed up our outfit and as much food as we could carry and started up the valley for the volcanoes. Our remaining provisions, together with everything not essential to our work, were left in the base camp. Although we had made things as snug as we could, it was not without considerable trepidation that we turned our back on our supplies; for in



Photograph by D. B. Church

MOUNT MAGEIK FROM OBSERVATION MOUNTAIN

A cap of thin clouds persistently clung to the summit, so that we could not get a clear view. The great mass of the mountain is well brought out in this picture. The ash conceals its glaciers, of which there are several.

such a desert country we were absolutely dependent on our provisions, and if a bear or wolverine should take it into his head to wreck our camp in our absence we should have been in a bad way.

Three or four miles up the valley we came out into the open, where we could see the distant mountains of the main range. Standing square across the head of the valley stood Mount Mageik, its magnificent three-peaked snow-cap brilliant in the sunshine. From a small crater east of the central peak issued a column of steam, which, although clearly visible for 50 miles out to sea, appeared diminutive in comparison with the bulk of the mountain (see page 30).

Mount Katmai itself was concealed beyond the bend of the valley, so that we were to have no glimpse of it until we encamped at its foot.

A NEW VOLCANO NAMED FOR DR. MARTIN

But to the west of Mageik, in a position where no volcano is indicated on the maps, was rising from a comparatively low mountain a tremendous column of steam a thousand feet in diameter and more than a mile high.

Comparison with Horner's picture showed at once that this was the mountain he photographed as "Mt. Katmai," when he penetrated to the upper valley in 1913. It was clear enough from its location that it could not be the mountain called Katmai on the maps, which is east of Mageik. Even from our position it was evident that this was at present the most active volcano of the district.

And it was not at all certain but that this, rather than Katmai, had been the seat of the great eruption whose effects we were studying; for, curiously enough, there has never been any very positive evidence, beyond the statements of a few natives who saw the beginning of the eruption, that it was Katmai, rather than some other volcano in the vicinity, which exploded. Indeed, there was one well-informed man in Kodiak who assured us that he had climbed the mountains back of Amalik Bay and taken bearings which fixed the location of the vent nearer the coast, in a position which he indicated by a cross on my chart (see map, page 23).

Fortunately we were able later to obtain evidence which fixed the seat of the great eruption beyond question. In the first place, we found that the deposits became progressively deeper as we approached Mt. Katmai, while the volcano of Hesse and Horner's photographs was near the edge of the ash fall. Thus the deposits on the lower slopes of Katmai are 15 feet deep on the level; but 10 miles farther south, near the other volcano, their depth is to be measured by as many inches, and only a mile or two beyond the country is covered with vegetation, so rapidly do the deposits thin out in that direction.

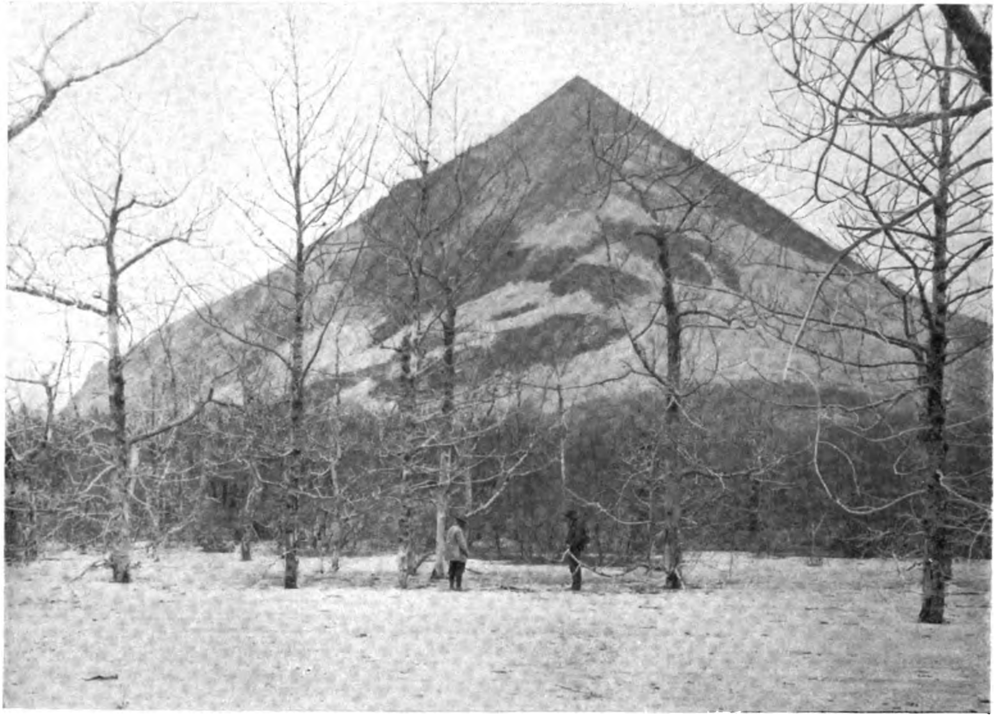
Moreover, great as is the activity of this volcano, its crater, in comparison with the great caldera, which we later found in Mount Katmai, is relatively diminutive and quite too small to have thrown out such a tremendous quantity of ash and pumice in so short a time. Further, great as must have been the changes wrought in the landscape in the sudden opening of a vent a thousand feet in diameter, they were relatively insignificant beside the tremendous change we found in Mount Katmai itself. There can be no question therefore that the eruption was from Mount Katmai and not from any other vent.

But if we were convinced that the volcano of Hesse and Horner's photographs was not Katmai, we were equally uncertain of what it was, for none of the maps show any volcano near its location nor give any name to the mountain, and there appears to be neither record nor tradition of any volcano in that quarter.

There is every reason to believe, therefore, that this new volcano sprung into being at the time of the great explosion.

But tremendous as is the phenomenon of the opening of such a gigantic vent through a mountain, we were to find later other accompaniments of the great eruption of even greater magnitude.

In order to discuss the new volcano, it is necessary to give it some designation. It seemed to us as we watched the new "steamer" that no name could be more appropriate than one commemorating the work of Dr. George C. Martin, whose explorations and report for the National



Photograph by D. B. Church

A CAMP SITE OF 1915: TREES ALL KILLED BY BLAST FROM THE VOLCANO

On our first expedition our camp stood on the bank of Fickle Creek, whose channel, six feet deep, occupied the foreground of the present picture. During the year the channel completely filled up, so evenly that the location of the former bank could not be detected, and a new channel has been dug a thousand feet away. Yet so gently was this filling accomplished that the embers of our camp-fire, on the same level and only a few feet away, were not disturbed. Compare the picture on the opposite page.

Geographic Society will always stand as the first authoritative account of the great eruption of Mount Katmai. We therefore suggest that this new volcano be called Mount Martin.

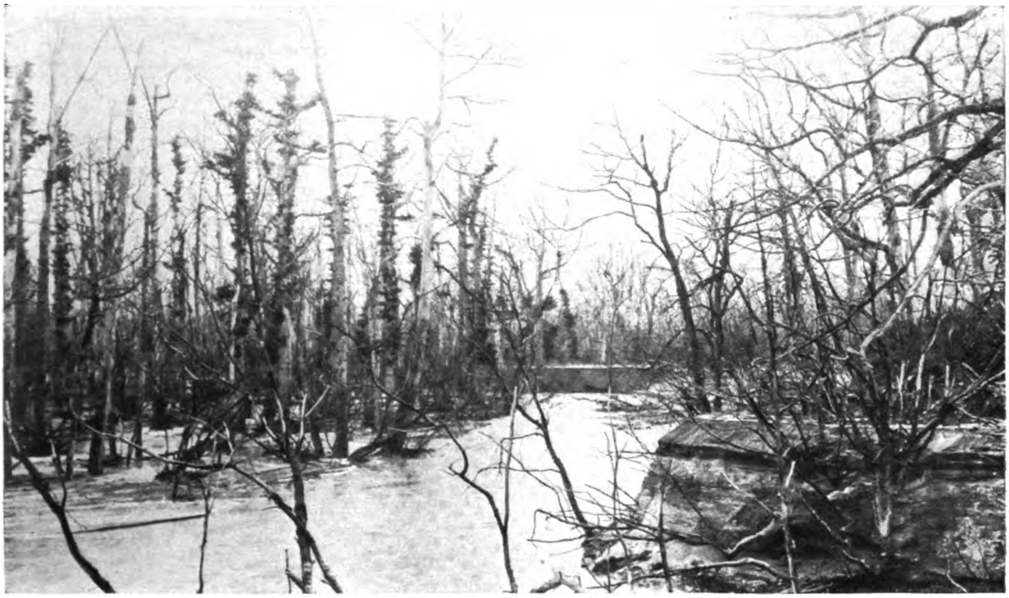
We were not able to determine the position or altitude of this new volcano with precision, but have located it approximately on the map given on page 23. Although situated in the main range, it is considerably lower than the neighboring mountains. Its altitude is approximately 5,000 feet.

ASH SLIDES MORE THAN A THOUSAND FEET HIGH

When we reached Soluka Creek we found it much more formidable than our reconnoiters in the dust storm had indicated. Leaving the others on the bank, I dropped my pack and waded out through the dead forest for half a mile in the icy water. From that distance it looked wider, deeper and swifter than from the starting point. I therefore decided it was impracticable to attempt to cross under our heavy packs, so we camped that night in the dead forest on the flat near by.

Next morning, starting to hunt for a practicable ford, we climbed up on to the shoulder of a mountain where we could get a bird's-eye view of the creek below and select the likeliest place to try.

Here we found a new experience in climbing the great ash slides with which the lower slopes are covered. Wherever the mountains were precipitous and too steep for the ash to stick, it slid down into the valleys, covering the lower slopes with great fans of sand, which stand at the critical angle ready to slide down at the slightest provocation. Some of these ash slopes are more than a thousand feet high. Their surface is loose, rolling sand,



Photograph by R. F. Griggs

THE BED OF FICKLE CREEK IN 1916: IT HAD SHIFTED A THOUSAND FEET IN THE YEAR

into which one sinks to his ankles, while new sand continually slides down on to him.

Often the whole slide above one will begin to move and then he is placed in a tread-mill, where he must keep moving or slide to the bottom (see page 37). Such climbing was of course hard work, and we soon cut up our finger-nails and wore the tips of our fingers down to the quick in the sharp sand by using our hands to help us in climbing.

FORDING A MILE OF QUICKSAND

When we descended to the ford we found that the bottom was a continuous quicksand clear across.

Sometimes the surface would hold like the crust of a snowdrift; but we were in constant fear of going down, for on sounding with our alpenstock we discovered that the whole length of the stick went down into the sand anywhere without finding bottom. Often our footing gave way and we found ourselves floundering up to our middle in quicksand.

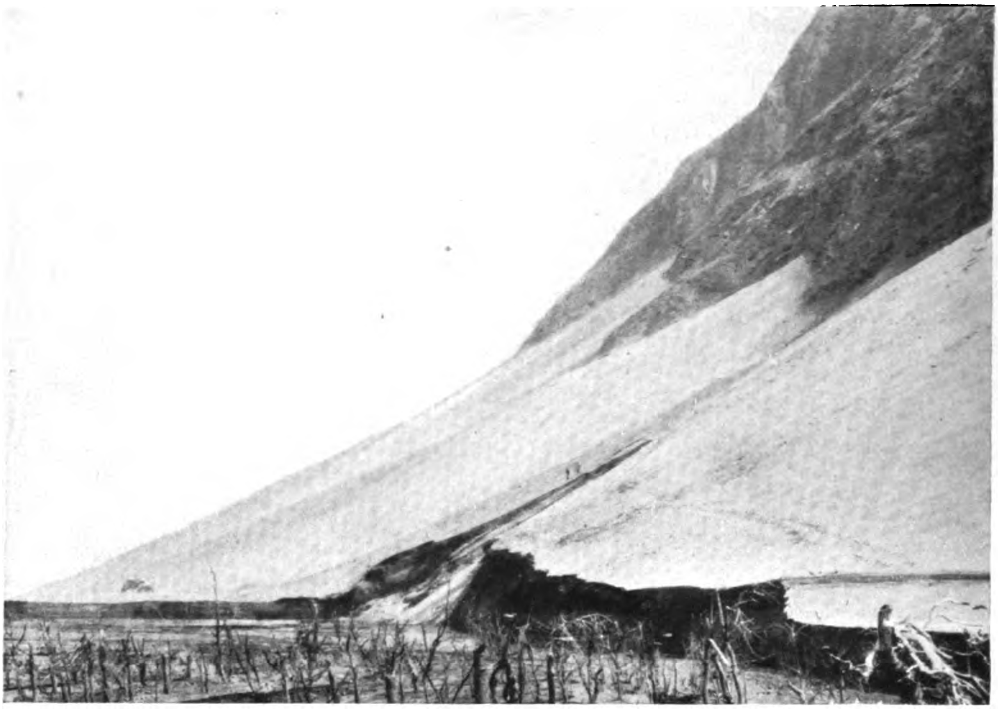
With all our crossings in the two expeditions no one ever got in so deep that he could not get out alone. But there was the ever-present knowledge that we never touched the bottom and the fear of what might happen next time.

Besides this the labor of carrying a pack through such mire is so great as to defy description. It must be experienced to be appreciated. Every step takes all one's strength and soon one's weary muscles ache from the strain. But once in, there is no chance to rest until one reaches the farther shore, for there is no place to lie down or sit down, and if one even stands still he immediately begins to sink. Even the strongest man is well-nigh exhausted after a mile of such work.

The condition of streams choked with ash and pumice is peculiar in the extreme. They spread out over their whole floodplain, wandering this way and that through the dead forest in a most fantastic way, changing their courses continually, so that the stream is never the same for half an hour at a time. The whole bottom is rapidly traveling downstream, its continuous, steady motion resembling one of the moving platforms which are sometimes used to transport passengers.

One stream near our camp had cut clear through the accumulated mass of ash just below a fall, forming a bluff some 70 feet high. A hundred yards downstream, however, the slope, though still very steep, was less, and the stream had been completely overcome by the enormous quantity of pumice in its way.

It was ludicrous to watch the struggles



Photograph by R. F. Griggs

ASH SLIDES IN UPPER KATMAI VALLEY

"Wherever the mountains were precipitous and too steep for the ash to stick, it slid down into the valley, covering the lower slopes with great fans of sand" (see text, page 34)

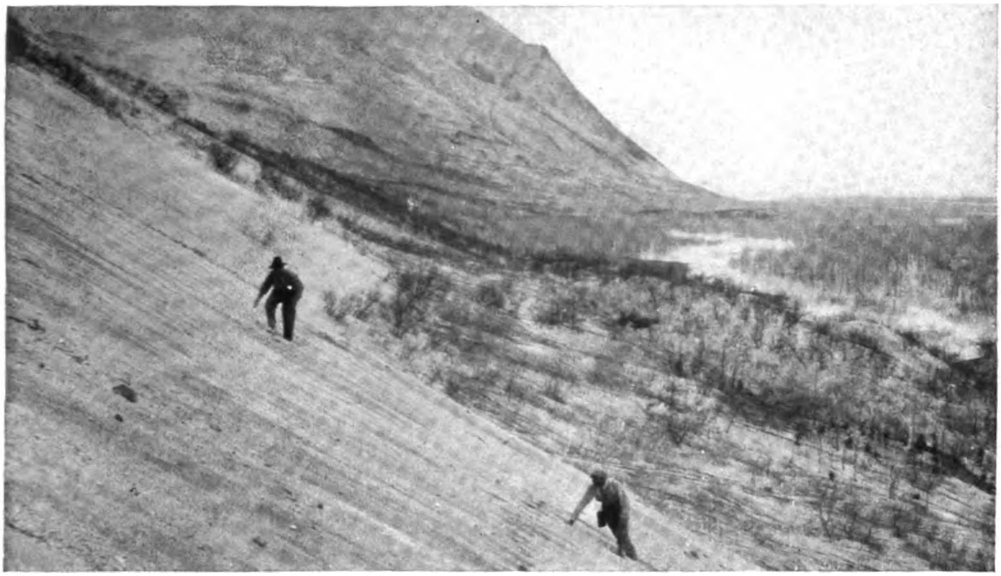
of this stream as it wrestled with the pumice in its bed. Dammed up in the failure of a previous attempt, it would gradually accumulate enough energy for a new effort. Then suddenly breaking loose from its bonds, it would rush forward down the slope, pushing a pile of pumice before it, as though to engulf the onlooker, writhing this way and that like a live thing, picking up pieces of pumice and floating them along as it came. Before it had gone far, however, its new load would literally choke it, and it would give up the struggle in a hiss of grating pumice stones.

It was quite a problem to secure water from such streams. The water always carried such quantities of large angular pumice fragments, not to speak of sand and mud, that it was out of the question to attempt to wash in the brooks. If we tried, the pumice would so grind into our flesh as to prohibit any further efforts at cleanliness. But while washing is a matter of choice, one must drink whether or no. We were obliged everywhere to strain our water through one of our food-bags. Often we would have to strain a quart of pumice to get a pint of water. The stream changed so rapidly that we sometimes had to move before we could fill a bucket. Straining, of course, removed only the coarser grit.

At one of the camps our water was so full of mud that Mr. Folsom refused to wash his face for three days, because he "did not want to dirty it with the water we had to drink."

CAVERNS FORMED BY SNOW MELTING BENEATH THE ASH

The day after crossing Soluka Creek we climbed the mountain to the west in hopes of seeing the volcano, for we feared lest the fine weather which had favored us would come to an end before we should attain our object. Our quest, however, was vain, for when we reached the summit we found that another summit, not marked on our map, cut off our view so that we could not see Mount Katmai. This we called Barrier Mountain.



Photograph by R. F. Griggs

AN ASH SLIDE: SOLUKA CREEK

Some of these slides spread out into gigantic fans more than a thousand feet high. Standing at the critical angle, their slopes are very hard climbing. We soon ground our finger-nails to the quick in the sharp sand of these slides.

We tried to cross the pass to reach a position where we could see the condition of the volcano, but were balked by a new kind of difficulty. On the way up one of us, sticking his staff into the ground harder than usual, discovered that it went through into a cavern beneath. Examination showed that we were supported on an arch of ash a foot thick, spanning a deep hole.

We found that the mountains everywhere were deeply covered with snow, which was concealed by a mantle of ash and pumice blown over it by the wind. The snow beneath was rapidly melting out in the warm weather, leaving the ash surface standing as smooth as ever above the cavity.

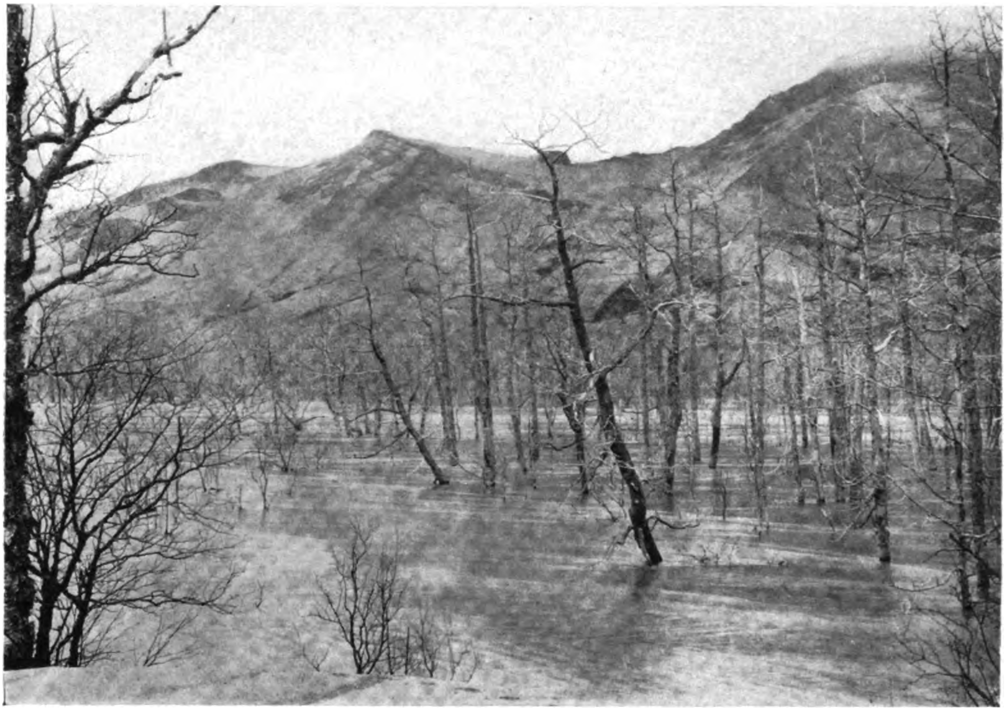
Such small holes as the one into which we had accidentally broken were, of course, of no consequence; but as we looked down one of the side valleys, we could see great cave-ins in an apparently smooth ash field, where a stream burrowing through the snowdrifts beneath had undermined the surface. For half a mile or so the tunnel thus made had caved in, and then for another half mile it was still intact, giving no indication of its presence to an unwary traveler (see page 41).

Reflecting on the significance of such phenomena for us, we carefully chose a path free from all appearance of buried snowdrifts. We had not gone a hundred yards, however, when I happened to stamp my foot and was astonished to hear the ground beneath me ring hollow. We quickly retreated, spread out, and tried another place. We had not gone far when all three of us at once, though 50 feet apart, detected a cavern beneath us. We had absolutely no means of judging whether the hole was 5 feet deep or 50, nor of estimating the strength of the roof.

The danger of such a situation was altogether too great to undertake, so we reluctantly turned back, with as yet no view of the volcano.

AN AWE-INSPIRING VALLEY OF DEATH

The following day we started to encircle the mountains into upper Katmai Valley. As we proceeded the country became progressively more desert. Small birds which were common in the lower valley were absent here. The stillness of the dead forest was oppressive. One could travel all day without hearing a sound but his own footfalls and the plunge of rushing water. The bear trails persisted until we turned the corner into the upper valley, but there they disap-



Photograph by D. B. Church

THE GLOOMY STRETCHES OF SOLUKA CREEK: TREES ALL DEAD

I must confess that even after many crossings of this sinister stream without mishap I could never plunge in without a shudder of dread. So wide that from the middle we could see neither shore, its swift current everywhere churning the quicksand, it presents a formidable obstacle to a man carrying a pack. I was in constant fear lest some member of the party would be mired in its depths, for, although we seldom sank below our knees, we could plunge the full length of our alpenstock into the quicksand anywhere without finding bottom (see text, page 35).

peared. Beyond that point there were no signs of animal life, except a pair of bald eagles, which reconnoitered our camp the first night, a few mosquitos, and, curiously enough, a humming-bird moth, which seemed strangely out of place in such a valley of death.

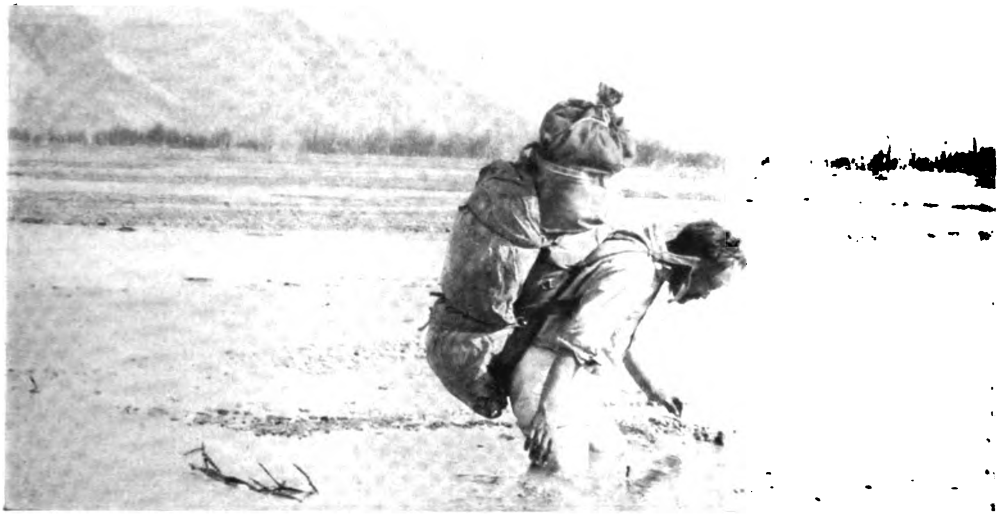
Clouds hung so low that everything above a thousand feet was obscured, but as we pushed up into the valley a feeling of tremendous awe possessed us. We had quite exhausted our stock of superlatives in the lower valley and found ourselves altogether without means of expressing the feelings that arose in us or of describing the scene before us.

MORE EVIDENCE OF A TREMENDOUS FLOOD

As we proceeded, evidences of flood damage rapidly increased; but we noticed that none of the tributary streams had been affected, and when we reached the forks of the river we found that the whole flood had come down from under the volcano itself, wreaking havoc in its way. A deep channel had been eroded in the pumice deposits. Part of the way it had washed out all of the pumice and had cut into its original bed besides.

For miles where thick forests had stood the trees were sheared off at the surface of the ash (see picture on page 42, taken a year later, after the stream had cut away the pumice, exposing the stumps). The few trees which remained were bent, twisted, splintered, and broken in every describable manner. In places, sheltered from the extreme fury of the waters, the trees were piled high with driftwood.

The volume of water had been enormous. We found high-water marks 25 feet above the bed of the stream where the valley was two miles wide.



Photograph by B. B. Fulton

THE AUTHOR STRUGGLING THROUGH THE QUICKSAND OF KATMAI RIVER

The swift water running over the ash and pumice packs the surface, giving it a crust which sometimes holds a man and sometimes breaks under his weight. Crossing these flats is somewhat like traveling in snow with a weak crust. One will go along easily ankle deep for a few steps and then suddenly drop down to his waist. The labor involved in such travel cannot be described, but must be experienced to be appreciated (see text, page 41).

As we gradually came fully to comprehend what a tremendous catastrophe this flood had been, we were more and more thankful for the good luck which had delayed our expedition until after it had passed. If we had landed a week earlier, we would certainly have been overwhelmed, unless by chance we had happened to be on high ground, out of the valley, at the time of the disaster.

We had finally penetrated as far as we could up the valley and camped, as we hoped, about opposite Mount Katmai; but we could not be sure of our position, for the clouds hung low.

A FLOW OF BRIGHT RED MUD MORE THAN TWO MILES LONG

Here we beheld a formation quite different from anything else we had seen. A ravine which branched off from the main valley behind a spur of the mountain was filled by what looked like a great glacier, except that its color was a bright terra-cotta red. In every detail of its form except for its crevasses it was exactly like a glacier: beginning at a considerable elevation, where the ravine was narrow, it sloped evenly down to the valley level, widening as it descended, so as to assume a triangular form.

If the color had not been so different from everything else in the landscape, we would have been quite sure it was a glacier covered with dirt. But in such a situation no glacier could have escaped without a thick covering of the omnipresent ash. We concluded, therefore, that it must be a mass of mud which had run down off the volcano.

Later, when we visited it, its structure confirmed this theory. As it lay on top of the ash, it had evidently been formed since the eruption. Although it was hard and firm, so as to be easy walking, both its structure and its form showed clearly that it had reached its position in a semi-fluid condition. Like a glacier, it had a

Photograph by L. G. Folsom

RESTING ON THE TRAIL

relatively steep front and was convex, highest in the middle, so as to turn the drainage off to the edges, along each of which a deep canyon had been cut.

But despite the indications that it had once been fluid, we saw no mud-cracks or other evidence of shrinkage upon drying out, such as one would have expected to find in a mud-flow. Its length we estimated by our pedometer at 2½ miles. Its highest part attained an elevation of nearly 1,000 feet, from which point it sloped to about 300 feet at the base. We were not so well able to estimate its thickness. But along the edges where it was cut into by the streams a section about 50 feet thick was exposed. In the middle it may have been much thicker, both on account of the convexity of the surface and the greater depth of the valley floor.

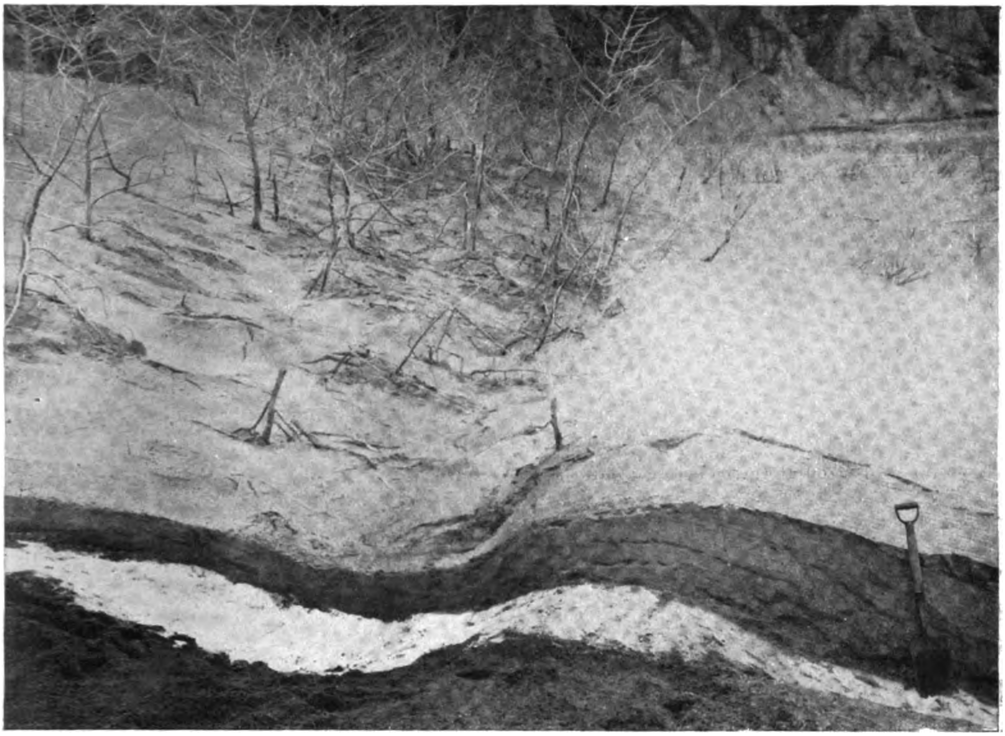
Under erosion, this and other similar mud-flows, later found, develop very striking bad-land topography, so that on a bright day one might almost imagine himself to be in western North Dakota if it were not for the streams trickling everywhere from the melting snows. When the mud dries it becomes hard and holds its shape, so that the sides of the gullies remain vertical, as they are cut by the streams, and do not crumble away as would softer soil.

LAVA ALL BLOWN TO FRAGMENTS

We were very much surprised at the character of the ejecta close to the crater. Post-cards are current in Alaska showing great rocks which are said to have been "hurled from the volcano," and we ourselves had expected to find something of the sort.

The fact is, however, that the violence of the explosions was so great that everything which came out of the crater was blown to "smithereens." Pieces of pumice six inches in diameter were hard to find, and the very largest piece we could discover near Mount Katmai was less than nine inches in its longest dimension.

Nowhere was there any flow of lava in connection with the recent eruption. This is due to the fact that the lava as it rose through the throat of the volcano was so heavily charged with gases, mostly steam, under enormous pressure, that on reaching the surface it was either blown into a froth of pumice by the sudden ex-



Photograph by D. B. Church

A SNOWDRIFT COVERED BY TWO FEET OF WIND-BLOWN ASH, NEAR KATMAI VILLAGE, AT SEA-LEVEL, JULY 15

Thus protected from the sun, melting of the snow is so retarded that in many places formerly uncovered early in the season the snow now fails to melt away and is accumulating year by year.

pansion of the included gas or exploded and was completely disrupted, forming ashes and dust.

On first thought one is apt to be more awed by a force that could hurl great rocks through the air than one which merely throws up ashes and dust. But when one reflects that ash and pumice are rock blown to fragments by the violence of the explosion, he realizes that much mightier forces are involved than would be required to toss boulders about.

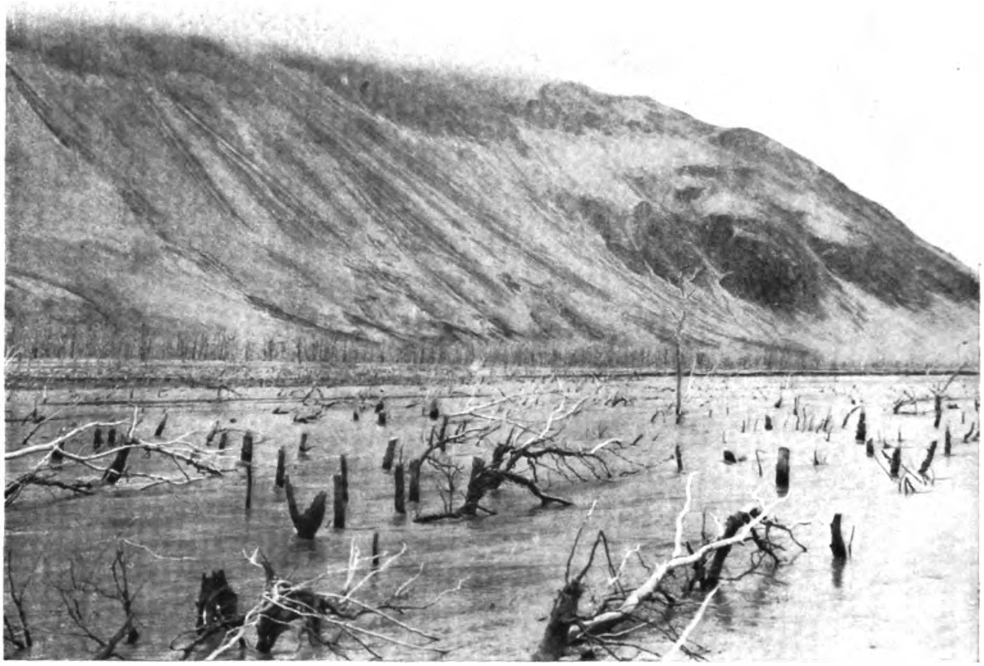
CROSSING THE RIVER

In spite of the desolation of the valley, even in the shadow of the volcano, some few remnants of plants persisted in sheltered nooks on the steep mountain side. In our climb we found living plants of devil-club, lady-fern, salmon-berries, a willow, a sedge, and a bedstraw. The leaves of most of these were injured around the margins, and in general they appeared more dead than alive, though, of course, still retaining the possibility of later becoming the means of revegetating the country.

Our next venture was to try to cross the river to examine the lower slopes of the volcano and the mud-flow. This we found a very formidable undertaking. Although the stream was divided into many channels, none of which was deep, it was so swift as almost to carry us away. Indeed, both Fulton and I went down under its current and succeeded in getting out only with difficulty. We did not mind the ducking, even though the water was icy cold, but we were in fear of wetting our precious cameras (see page 39).

A SECOND NEW VOLCANO—THE TRIDENT

After two days of waiting, the sky cleared, and when we woke we beheld the whole range. Off to the westward was a steady column of steam rising from Mount Martin, which was concealed be-



Photograph by R. F. Griggs

THE GREAT ASH SLIDE OF SLIDE MOUNTAIN

Our experience in taking this picture furnished an amusing example of our inability, even accustomed to stupendous dimensions as we were, to form any real conception of the size of the wonders by which we were surrounded. Desiring to have a scale by which the size of the slide could be gauged, I sent one of the men up on it for that purpose; but, to my astonishment, when he emerged from the forest and began to climb up the slope I could barely make him out, much less find him in the resulting picture. Our triangulation gave it a height of nearly 1,900 feet (see text, page 34).

hind a foothill, which, from its position, we named Observation Mountain. Next were the three peaks of Mount Mageik (see page 32), covered with newly fallen snow. Across its northwestern slopes formerly ran the trail to Bering Sea, across Katmai Pass, which, though reputed difficult and dangerous, looked very easy from our position.

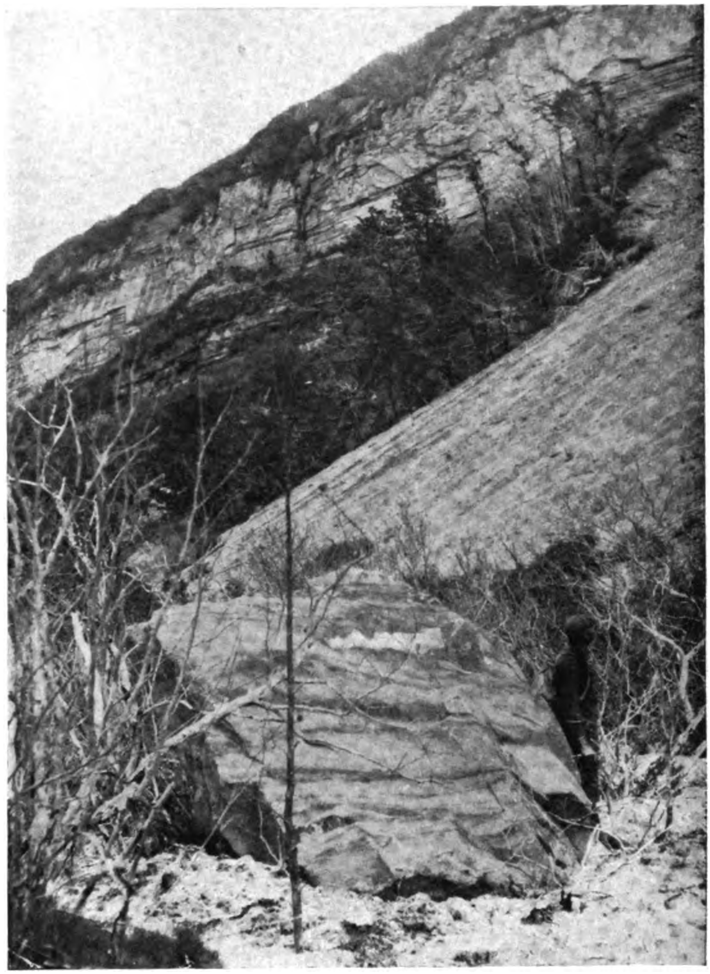
On the northeast side the pass is flanked by a lofty three-peaked volcano, which we called The Trident (see page 65). Its three peaks are arranged in semicircular fashion, leaving between them an amphitheater open toward Katmai Valley, which looks somewhat like an ancient crater breached on one side. The highest peak appears from the valley like an almost perfect cone, truncated at the top as though by a crater. Its height as given by the chart is 6,790 feet.

The present crater is a fissure at the base of this peak (altitude about 3,500 feet), from which issued, somewhat intermittently, a column of steam. Although the volume of this steam was quite small in comparison with that of Mageik and Martin, it sometimes assumed quite respectable proportions, rising 3,000 feet or more. There is good reason to believe that this vent also appeared in connection with the great eruption.

OUR FIRST SIGHT OF MOUNT KATMAI

Next in line beyond a wide pass stood Mount Katmai itself. This was quiescent during our visit and at first sight presented a rather disappointing appearance, for its glaciers and snowfields were so covered with ash as to make it suffer from comparison with Mount Mageik. As we studied it, however, we saw that its great bulk reduced its apparent height.

The crest, as seen from the valley, forms a great arc some three miles in length, highest at the ends, and broken in the middle by a sharp, tooth-like rock, which stands up out of the lowest place in the rim. Even from the valley the edges of this curving rim are so sharp as to give the top a hollow appearance, indicative of the great crater within (p. 48).



Photograph by R. F. Griggs

A ROCK WHICH ROLLED OFF THE MOUNTAIN SIDE ACROSS OUR TRAIL WHILE WE WERE UP THE VALLEY

MOUNT KATMAI IS NOW MERELY A STUB OF ITS FORMER BULK

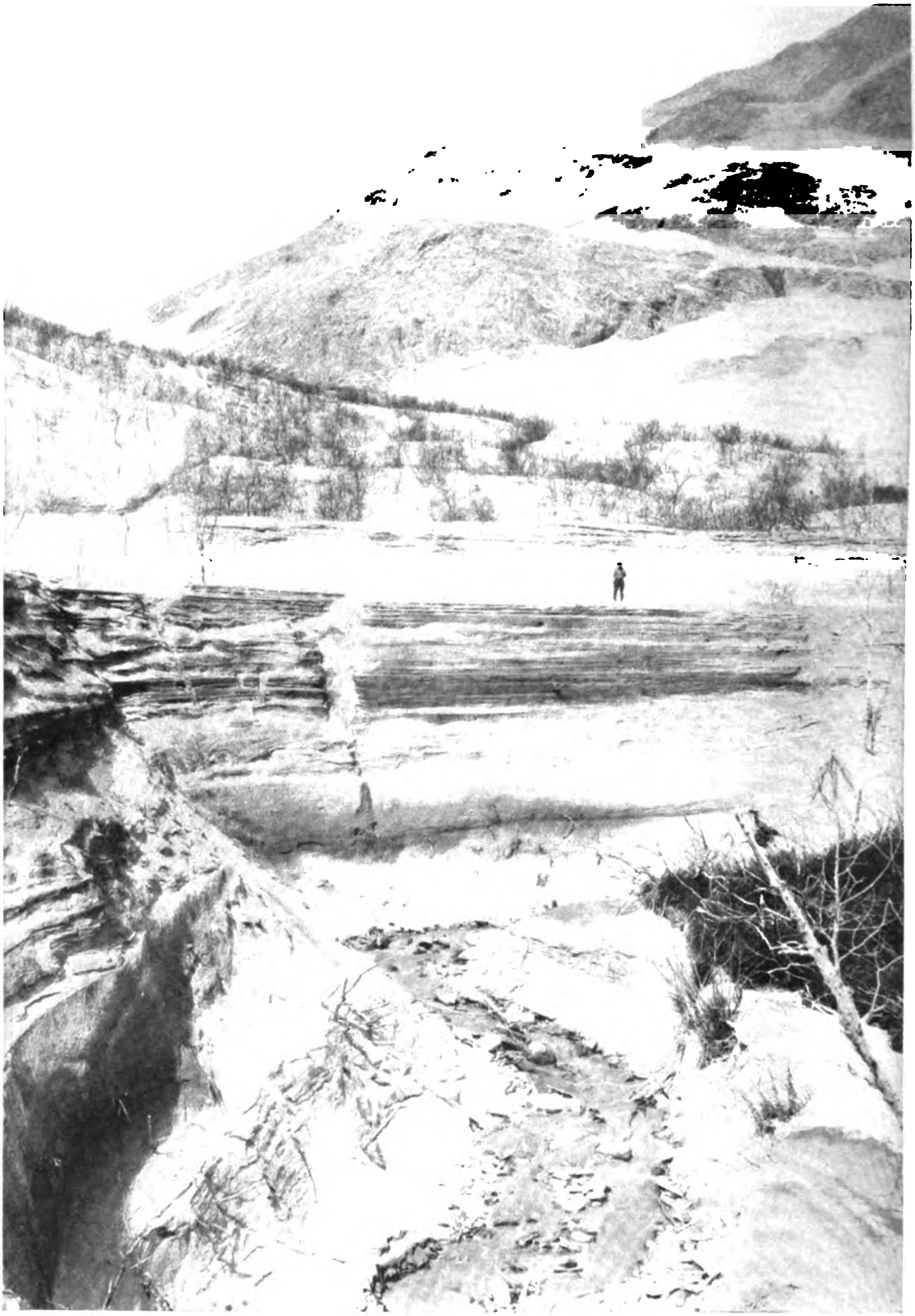
Although Mount Katmai was seen by many white men before the eruption, there is no record of any photograph or description of it; so that there is no very definite means of determining the configuration of the mountain before the explosion. It was higher than Mageik, however, and originally must have quite overshadowed the latter, because, though much less conspicuously placed in the valley, it gave its name to both river and town. The Coast and Geodetic Survey's chart of the district shows a three-peaked mountain with an elevation of 7,500 feet. The highest peak was to the south, while the middle one was 7,360 feet and the north 7,260 feet high respectively.

From the contours of the chart I have made a diagram of the mountain before the eruption for comparison with its present condition (see page 49). But even without the information given by the chart, it is evident that *the present mountain is merely a stub of a much greater peak of former days.*

Coming back into the lower valley after the total desolation of the country in the shadow of the volcanoes was like regaining the earth after a visit to the inferno. How green the trees looked! How the birds sang! How beautiful the green mountains! And this was the country on which we had exhausted our superlatives of devastation in an effort to compare it with Kodiak! We ourselves had not fully realized the awful devastation near the volcano until we felt the relief from its contemplation in the comparative verdure of the vicinity of the ruined village.

We were much relieved to find our base camp intact. Although a wolverine had been prowling around, he had evidently been suspicious of such fresh signs of man and had not disturbed anything.

On July 29 we began to look for Mr.



Photograph by B. B. Fulton

AN ASH ACCUMULATION ON A TRIBUTARY OF SOLUKA CREEK

The streams covered their beds with many feet of ash after the eruption. Later they began to remove the ash, sometimes cutting deep canyons, as in this scene, where the human figure indicates the tremendous depth of the ash fall.

Photograph by R. F. Griggs

ON THE TRAIL IN THE UPPER VALLEY

Since the country was completely devastated, it was necessary to carry everything we had; if any essential thing had been forgotten the expedition would have been stumped

Johnson to come to take us back to Kodiak, according to appointment. We learned later that he tried to reach us both that day and the next, but was unable to land. On the 31st, however, the weather was clear and calm, so that he was able to get ashore.

We were rejoicing in the prospect of a speedy return to Kodiak, but soon found that our troubles were not over, for before he could get us off a "northeaster" blew up, so that he had to abandon us hastily on the beach and make for his boat with the word "Back at the first chance." The sea rose so quickly that he had difficulty in regaining the sloop and reaching a place of safety. It was not for three days that he was able to return, and then, although there was considerable surf running, we lost no time in getting aboard (see page 27).

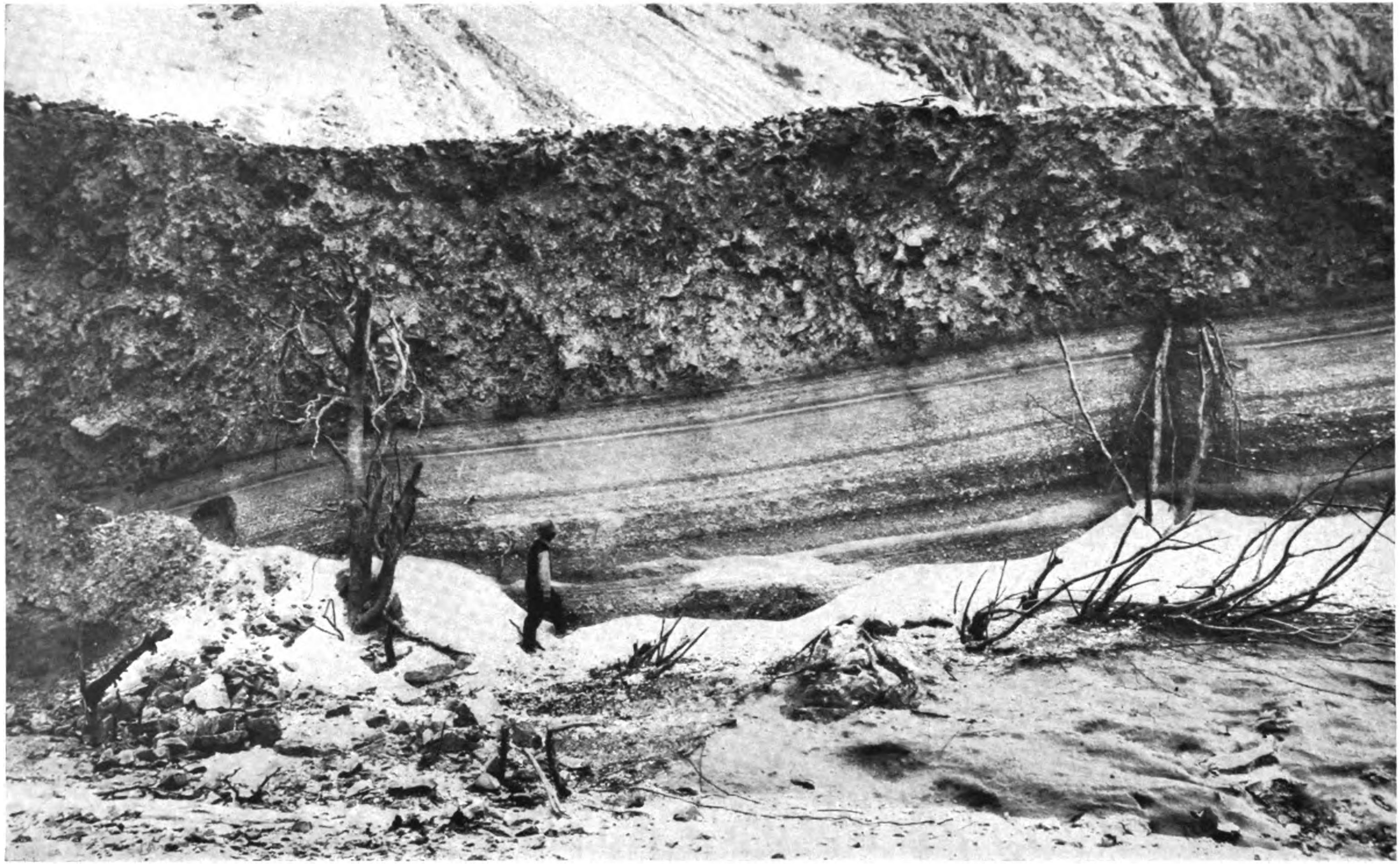
ORGANIZING THE EXPEDITION OF 1916

The expedition of 1916 was carried out on substantially the same lines as that of the preceding year, except that it was possible to organize the work more thoroughly and to provide against various contingencies which could not have been foreseen without the experience of the previous year. The party consisted of Mr. Folsom, Mr. D. B. Church, as photographer, and myself. The experience of the previous year showed the necessity of the employment of a packer also.

Here we met one of our most difficult problems, for we found that the natives were afraid of the volcano and could not be induced to go to the mainland. When we broached the matter to the chief, he said at once very positively, "Me no Katmai," and we learned later that he had advised his followers, "Life is better than money."

The problem was most happily met, however, when we thought of Walter Matroken, the celebrated one-handed bear hunter of Kodiak. He agreed to go without any hesitation and stuck to his promise, although, as we found afterward, the other natives used all sorts of arguments to dissuade him.

Already a hero among his fellows because of his many exploits as a hunter,

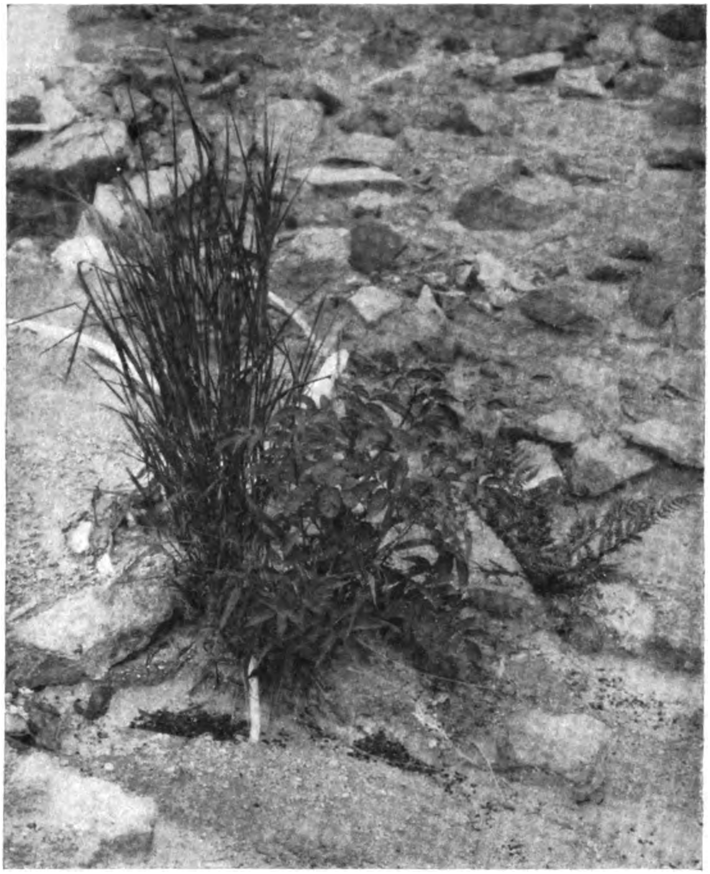


Photograph by B. B. Fulton

ASH DEPOSITS LYING AS THEY FELL TEN FEET DEEP ON THE LAND

Above is a mass of detritus from an avalanche which cut off the trees at the right. The section was made by the wash of the great flood.

he was doubly so when he returned safely, having actually looked into "The Hole" out of which had come the devastating blast. Even Walter, however, was very nervous on the crater rim, keeping sheltered behind a rock a good share of the time and shifting about uneasily as he watched us work, finally remarking when he thought we had overstayed our time. "Can't make nothing up here."



Photograph by R. F. Griggs

DEAD INSECTS UNDER A SOLITARY TUFT OF HERBAGE IN THE UPPER VALLEY

Under these plants was half a teacupful of dead insects of many species (seen as black spots on the ground), which had been attracted by the isolated herbage and come thither in a vain search for food. Perhaps the most striking change in the upper valley observed in 1916 was the great abundance of insects, where there had been practically none the year before.

THE BEAR HUNTER OF KODIAK

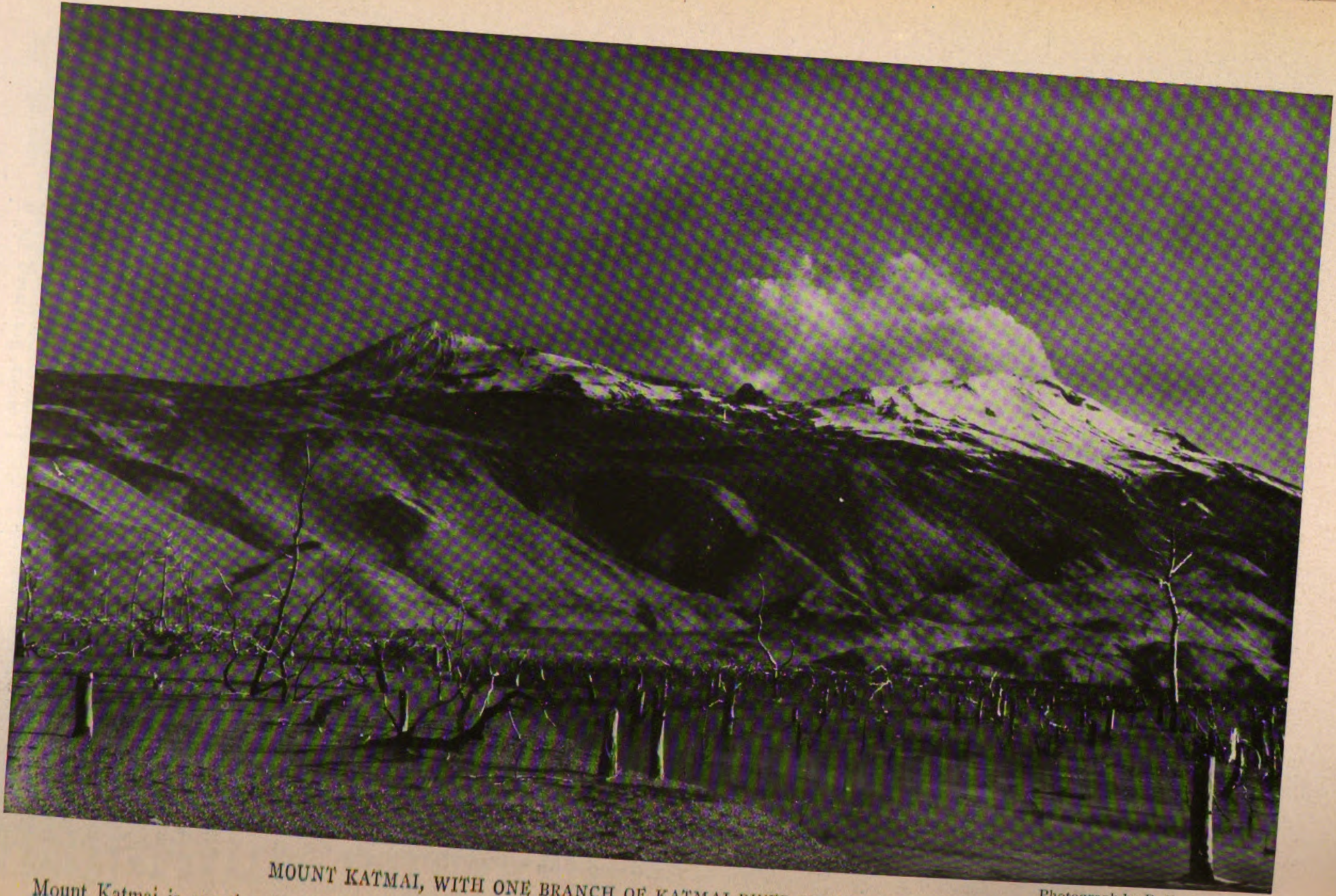
Walter was one of those strong characters whom one finds among all classes, who stand out superior to their fellows. Deprived of his right hand by a hunting accident in his youth, he has so overcome the handicap that with his one hand he can accomplish more than most men with two. We found nothing he could not do, even to tying knots and rolling cigarettes.

But when there came a place where we needed some one to handle a boat I supposed that finally I had found his limit, for I could not imagine how any man could handle two oars in one hand. Not so, however, for in a flash he had somehow lashed one oar to his stub and was rowing along as well as anybody.

The general appearance of the country was much the same as it had been the year before; but the mountains were greener, and even on the flat seedlings were beginning to start. When we began to examine old landmarks, however, we found that while the general appearances were unaltered, there had been great changes in detail.

The site of our camp of the previous year we found buried under 20 inches of fresh pumice, washed off the mountain side, while a stream had cut its bed across the place where our tent had stood. The year before this stream had been 50 yards distant and we never dreamed that it might come our way. As we journeyed up the valley, we found other similar changes, but the general conditions were but little different.

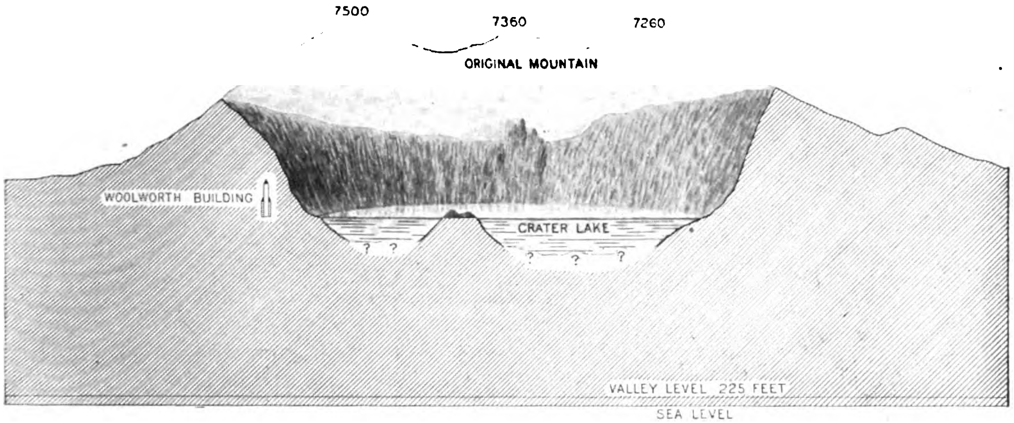
Soluka Creek was the same maze of quicksands that had almost turned us back the year before. I must confess that as many times as we crossed Soluka Creek I never got used to it. Although we



MOUNT KATMAI, WITH ONE BRANCH OF KATMAI RIVER IN THE FOREGROUND

Photograph by R. F. Griggs

Mount Katmai is exactly what it appears—a mere stump of the former mountain, which was completely disemboweled in the eruption. The great arc at the top is the rim of a gigantic crater within. The peaceful steam clouds now floating up from the crater compared with the devastating blast which once issued from it are like the wisps of smoke issuing from the cannon's mouth after the projectile has been fired (see p. 4



AN ILLUSTRATION OF MOUNT KATMAI AS IT WAS AND IS

Showing the original mountain reconstructed, the present crater rim, and the crater with its boiling lake. The Woolworth Building, drawn to the same scale, gives an idea of the depth of the crater.

never had an accident, I never could free myself from the dread of the crossing and the fear that the next time it would "get" one of us.

GRAND VIEW CAMP

When we arrived at the head of the flat we picked our camp site so as to command a view of the surrounding mountains. The marks of the great flood were no longer fresh on the ground and it was evident that there had been no similar catastrophe during the year that had elapsed. We therefore had no fear of a repetition of the flood and did not hesitate to camp out in the open, choosing, in fact, an island in the river, which, although being cut away by the swift water at the rate of several yards a day, was safe enough for the period of our visit.

I never expect to be privileged to have a camp site surrounded by grander scenery than was this island. On the east side of the valley was the waterfall that we christened Fulton's Fall, nearly a mile away, but the more impressive for its distance, framed in between the brilliant orange and green slopes of two mountains, which we called Slide Mountain and Avalanche Mountain, and backed by the rich red precipices of Barrier Mountain. The latter, though in reality several miles away, at the head of a valley, appeared set just a few hundred feet back of the fall, which has the majestic sweep attained only by falls of much greater height than breadth.

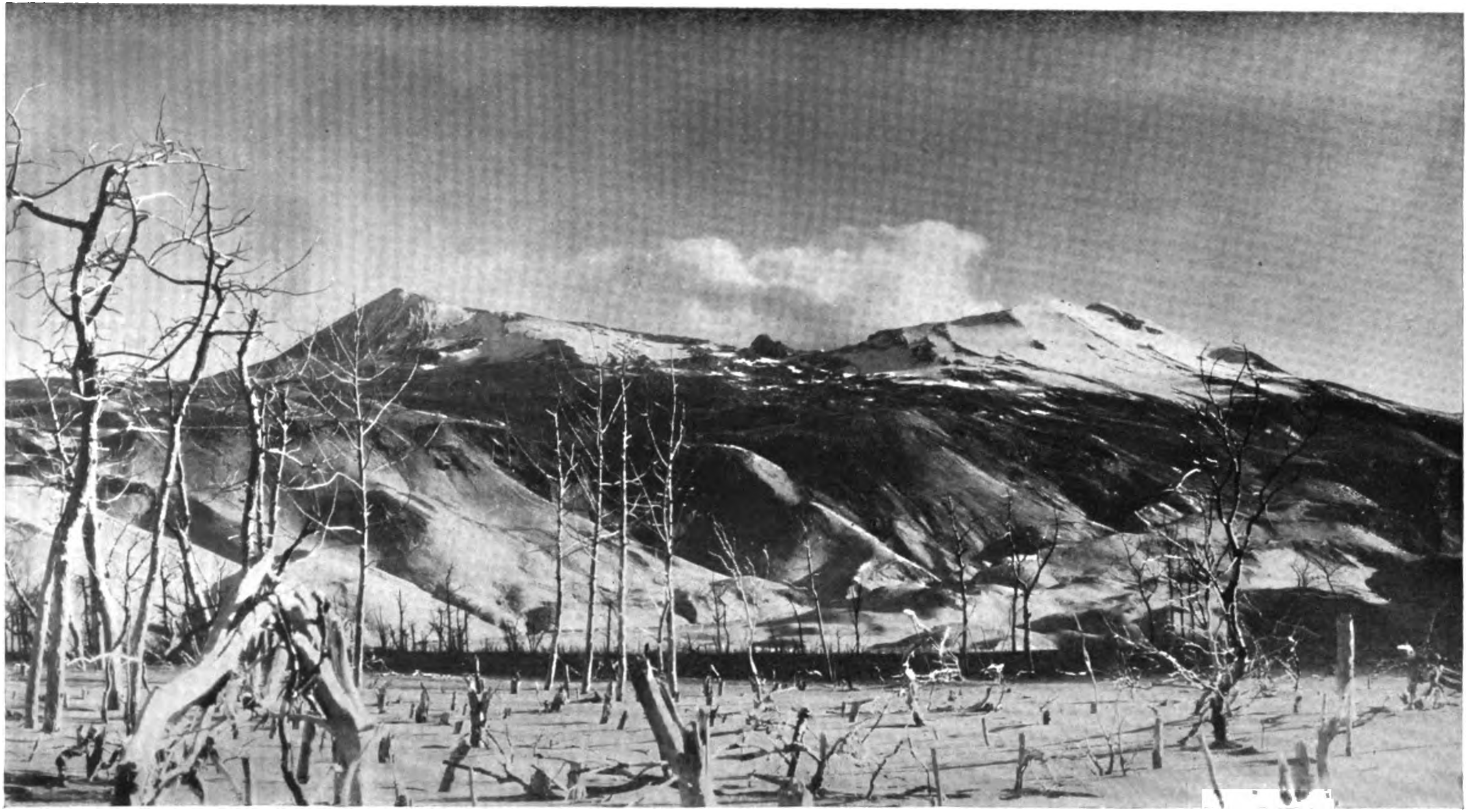
Farther up at the head of the valley stood the 1,500-foot cliffs which guard the entrance to the inner canyon of Katmai River, while towering aloft over inaccessible precipices the summits of Slide and Avalanche Mountains themselves presented fine enough spectacles to command attention in any other setting. But here they were eclipsed, for on the other side of the valley we could see the whole chain of glacier-covered volcanoes of the main range in continuous series, broken only by Katmai Pass, whose 2,700 feet looked low indeed by comparison.

From north to south were Katmai, Trident, Mageik—partly hidden behind Observation Mountain, and finally the distant steam from Martin (map, p. 23).

It was evident that the activity of all the vents was somewhat greater than the year before. There could be no longer any doubt but that considerable steam was rising from Katmai, whereas the year before we could not be certain of any activity. The column from Mageik was larger, and there was a small column rising from a point well down on the slope of Martin which we had not seen before.

INDICATIONS OF ACTIVITY ON THE BERING SEA SIDE OF THE RANGE

In addition to these vents, every time it was clear we saw very definite indications of more volcanoes on the other side of the range. Through Katmai Pass we could see two large clouds when every-



Photograph by R. F. Griggs

THE REMAINS OF MOUNT KATMAI (SEE PAGE 49)

The magnitude of the eruption can perhaps be best realized if one could imagine a similar outburst centered in New York City. All of Greater New York would be buried under from ten to fifteen feet of ash; Philadelphia would be covered by a foot of gray ash and would be in total darkness for sixty hours; Washington and Buffalo would receive a quarter of an inch of ash, with a shorter period of darkness. The sound of the explosion would be heard in Atlanta and St. Louis, and the fumes noticed as far away as Denver, San Antonio, and Jamaica.

where else all was clear except the "steamers." Over the isthmus connecting Katmai and Trident we saw, as we had in 1915, similar signs of activity.

These were, however, very puzzling, elusive, uncertain—quite different from the steady columns rising from Mageik and Martin; for they were not only inconstant and variable in volume, but equally uncertain in position, appearing now at one point and now at another (see page 65).

STARTING FOR THE FIRST ASCENT

On finding the sky clear and bright the morning after our arrival, July 19, we decided to see how the river was and to reconnoiter the volcano with a view to picking our path for the climb when the proper time should come.

When we started we had little idea of making the ascent, expecting to content ourselves with reconnoitering the lower slopes. But as we went on we became more and more anxious to try the climb. So, leaving the mud-flow at about 800 feet, we started up the long ridge which runs out parallel with the canyon. This was easy going, with a gentle ascent up to 2,000 feet, when we suddenly came into sight of the upper valley of Katmai River.

THE TREMENDOUS FLOOD EXPLAINED

We found that the canyon was only as long as Mount Katmai itself, while farther on, the valley turned to the east and expanded again into a flat, in which we discovered three large lakes, blue as the sky, in strong and grateful contrast to the gray land.

But what especially surprised us was suddenly to discover the origin of the flood which had so sorely puzzled our party the year before (see pages 20 and 38). A stream flowing between Katmai Volcano and its neighbor had piled up an immense dam across its valley. Behind this dam a vast lake had accumulated until the pressure of the impounded water became irresistible, when the dam burst and the torrent, like a Johnstown flood, rushed seaward, fortunately without human toll.

Turning from the lakes with the hope that we might be able to return and explore them, we roped ourselves together and decided to have a try at the slopes above.

We were on dangerous ground from the outset. The surface was covered by many feet of ash overlying snow, which, melting out from beneath, made the surface slump away and crack open in all directions, while at intervals boiling torrents issued from the cavernous depths. No experience with snow bridges could give any precedent for judging the strength of such ash bridges and we had no means of knowing what to expect.

It was with fear and trembling that I ventured out across the first and, as it proved, the worst of these bridges. It was only a few feet wide, with perpendicular edges 30 feet high, while from beneath came a roaring torrent, which divided just below, part going down behind the arrête we had come up and part tumbling directly down the face of the mountain.

CLIMBING THE MUD-PLASTERED SLOPES

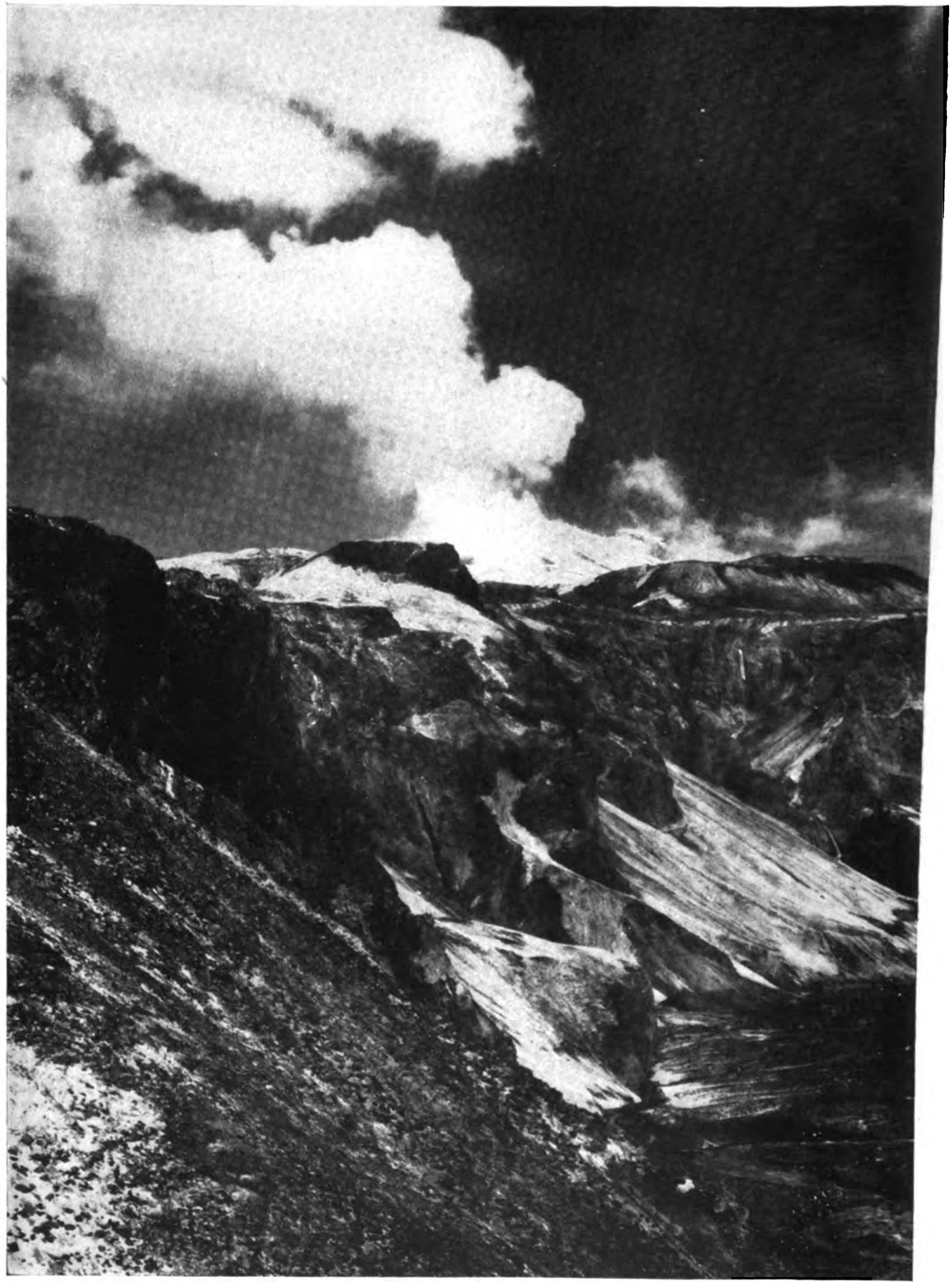
The slopes were all plastered with mud of varied colors—gray, yellow, chocolate, red, black, and blue—the results of the last spasms of the great eruption.

At the lower levels the mud was dry and hard, making easy going; but as we ascended, it soon became slippery, and a little higher soft and sticky. Most of the way it was about ankle deep, but in spots we went in nearly to our knees; and at times it required all our strength to extricate ourselves (see page 53). Unpleasant and laborious as walking through deep mud is under any circumstances, we found traveling up the slope very hard work indeed.

Above 4,000 feet the way was mostly through soft snow, with only occasional mud patches, and the slope became steeper as we advanced.

As we reached the higher levels the scenery became superb. We could see Kodiak Island across the strait over the tops of the nearer mountains, which presented a magnificent mass of sharp peaks and intervening snow-fields.

But finer than these was the canyon of Katmai River, which lay stretched below us. Flanked by the multicolored mud-



Photograph by R. F. Griggs

STEAM RISING FROM MOUNT KATMAI: VIEW FROM PROSPECT POINT

The ash slides of the recent eruption contrast with the massive ancient lava flows. At the right are two fine waterfalls. The summit stands about a mile above the observer (see text, page 55).

Photograph by R. F. Griggs

STUCK IN THE MUD ON THE WAY UP TO THE CRATER

The slopes of the volcano are covered with soft, sticky mud and slush (see text, page 51)

flows, with the river hidden within the lower gorge, this resembled greatly the Grand Canyon of the Colorado, and indeed, except for its shortness, rivaled the latter in its proportions, for it is about 4,000 feet deep, of which about 1,500 feet is the inner gorge, cut through beautiful delicate green rocks, not to be matched in the Grand Canyon (see pages 55 and 58).

STEAM FROM THE CRATER OBSCURES THE SUMMIT

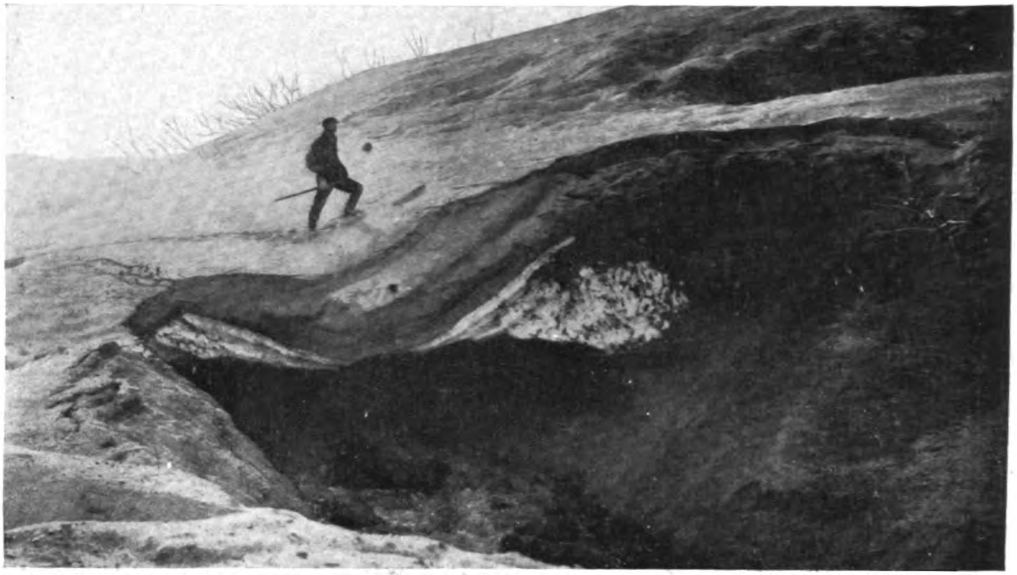
Long before we reached the brim the hard work had begun to tell on us and we were becoming tired, especially Church and Folsom, who were carrying packs. Mr. Church in particular deserves great credit for lugging the big camera, with its tripod weighing 20 pounds, to the summit. He told me afterward that he could never have done it except for two facts—that he was hitched to a rope and could not get away and the fear that if we turned back today we would have it all to do over again tomorrow.

As it began to cloud up, we were afraid we would not be able to see anything if we did reach the rim. All the other summits as far as we could see were clear, but Katmai became densely covered with black, heavy clouds which permitted only occasional glimpses of the top. Furthermore, we were on the lee side of the crater instead of to windward, as we should have been. We knew these clouds must be due, in part at least, to the activity of the volcano, because of the strong sulphurous odor which filled the air, but could not tell how much was to be attributed to this cause and how much was simply due to the greater altitude of the volcano.

As we came closer we could see that the clouds were in rapid motion, coming straight up out of the crater. What if we should reach the rim only to poke our noses into a steam jet through which we could see nothing! Nevertheless we were unwilling to give up now without at least a try, and so we pressed on.

THE CRATER

Finally, at 5,500 feet, we reached the rim. The inside wall was standing nearly perpendicular and great masses of snow and mud were cracked off from the edges, ready to fall in; so that I did not dare to look over the edge, even though anchored by the rope, until I could find a



Photograph by R. F. Griggs

AN ASH-COVERED SNOW BRIDGE SPANNING A STREAM WHICH CUT ITS WAY THROUGH BENEATH

The caving in of such bridges, which are often concealed, constitutes one of the most serious dangers to which the explorer is subject

place which looked safer. Then we approached the edge. Nothing could be seen through the rising steam.

But, as we looked, there came a little rift and we could see something blue far below us. Then the steam cut us off again and we waited. Again it blew away and we were struck speechless by the scene, for the whole crater lay below us. It was of immense size and seemed of an infinite depth.

A VITREOLIC LAKE

About half of the bottom was occupied by a wonderful blue and green vitreolic lake, with the crescent-shaped remains of an ash cone near the middle. In the larger end was a circle of lighter-colored water which was in continual ebullition.

Around the margin were a thousand jets of steam of all sizes, issuing from every crevice with a roar like a great locomotive when the safety valve lets go. On the far side, close to the water, were two large, bright yellow spots of sulphur, while in two angles of less activity there were snow-fields.

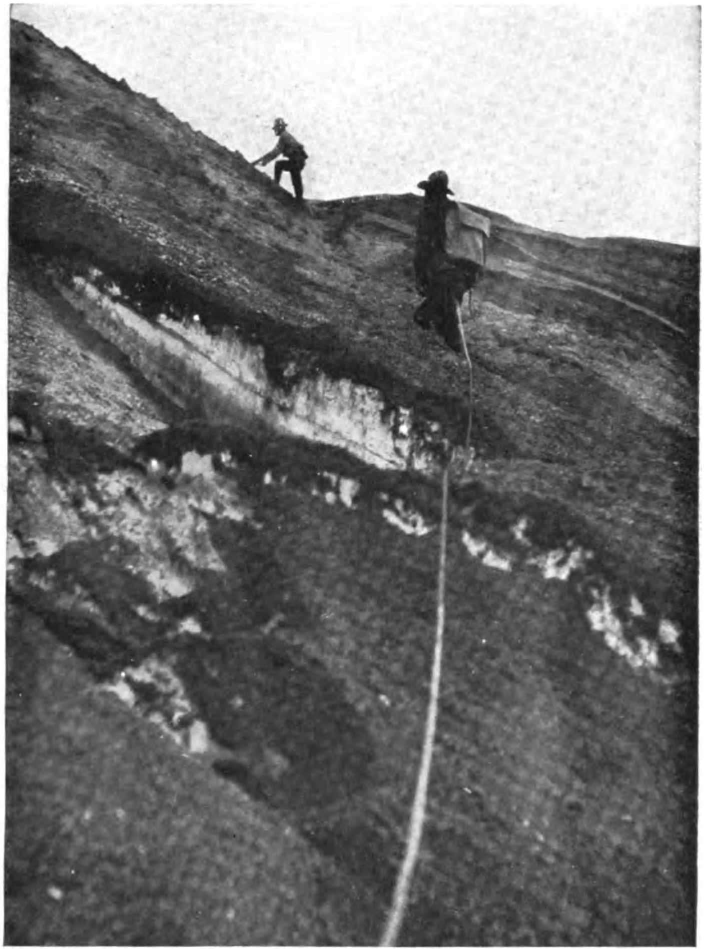
The perpendicular sides near us were composed entirely of frozen mud and fragments of various sorts of ejecta, and nowhere in the whole ascent did we encounter bedrock. On the opposite side of the crater we could see that the greater part of the wall was composed of lava and tufa, the successive flows giving it a roughly stratified appearance.

We were powerless to form any real estimate of the size of this stupendous hole. It was clear, however, that it occupied all of the area within the rim, which from below appears three miles long. As to the depth, the best I could do was to look in and then try to carry the same level to the slope up which we had come. Thus estimated, the depth was apparently about 1,500 feet. This estimate we subsequently had to enlarge.

All this we took in almost at a glance. Before we could get our tripod set up the cloud closed in again and we waited amid a thunderous roar of escaping steam. Were we to be cheated of the coveted pictures after all? Finally the cloud lifted a little and frantically we made our exposures.

I had planned to take bearings and measurements which would permit more accurate determination of the depth and size, but we were vouchsafed so few clear moments that we could not make them. We had reached the rim at 5.05 p. m. The moment we stopped moving we began to suffer so from our cold, wet feet that waiting was torture; but we lingered on the edge for 50 minutes hoping for better views, but as the clear intervals became less and less frequent we had to give it up and descend. None of us fully realized, I think, how far we had come till we found how long the return journey was, but we reached our camp safely at 10.20 p. m.

Next day I was up at 5.30 to take pictures of the mountains, for practically the only opportunities to get good pictures of the volcanoes came early in the morning. The sky was clear except for a few very delicate cirrus clouds above the mountains to the east. They were long combed out and lay in horizontal lines, drifting slowly toward Katmai.



Photograph by L. G. Folsom

THE ASCENT OVER MUD-COVERED SNOW

The climbers are within a few hundred feet of the crater rim (see text, page 51)

THE WONDERFUL SCENERY OF THE CANYON

Our distant view from the mountain of the second Katmai Valley, with its lakes, and especially the dam, which had caused the great flood, made us anxious to penetrate the canyon and examine the upper valley in detail. But we found it impossible to penetrate beyond the mouth of the canyon, being stopped on the brink of a 500-foot precipice, which we named Prospect Point.

The magnificence of the view from this point was simply beyond description.

It is like the Grand Canyon and the Canadian Rockies all put together and then the volcanoes added. The desert landscape, covered with the many-colored muds from the volcano, together with the fine colors of the rock walls, recall the Grand Canyon. But the upper slopes, with their sharp summits occupied by snow-fields and glaciers, remind one of the Canadian Rockies, in particular of such places as the "Valley of the Ten Peaks."

Down the sides pour numerous waterfalls, some of which are of great beauty. Opposite Prospect Point is one whose thin, misty streams drop 1,500 feet from the top of the inner canyon clear to the bottom (see page 61). Two more, each several hundred feet high, may be seen on the slopes of Katmai (see page 52).

Photograph by L. G. Folsom

PHOTOGRAPHING THE CRATER, SECOND ASCENT

The two sides of the canyon show very different rock structure. The east wall is a 1,500-foot cliff, of delicate green sedimentaries, but little metamorphosed, although shot through by numerous dikes of igneous rock, also pale green. But on the west the river is hemmed in by great mahogany-colored lava flows, whose massive cliffs rise 2,000 to 2,500 feet before giving way to the gentler slopes of the plateau. At least three successive flows may be made out lying superposed one on the other. All appear to have come from Katmai itself, but none of them is recent.

In the more exposed situations the wind has often cut through the different layers of ash, leaving the hillsides marked with many bands and circles, where deposits of different colors have been alternately uncovered.

EXPERIENCES IN A TERRIFIC GALE

Where the unprotected positions were occupied by birches, their dead trunks often bear evidence of the power of wind erosion; for on the northwest side their bark has been all cut away, and in many cases the wood deeply abraded by pieces of ash and pumice flying before the wind (see page 66).

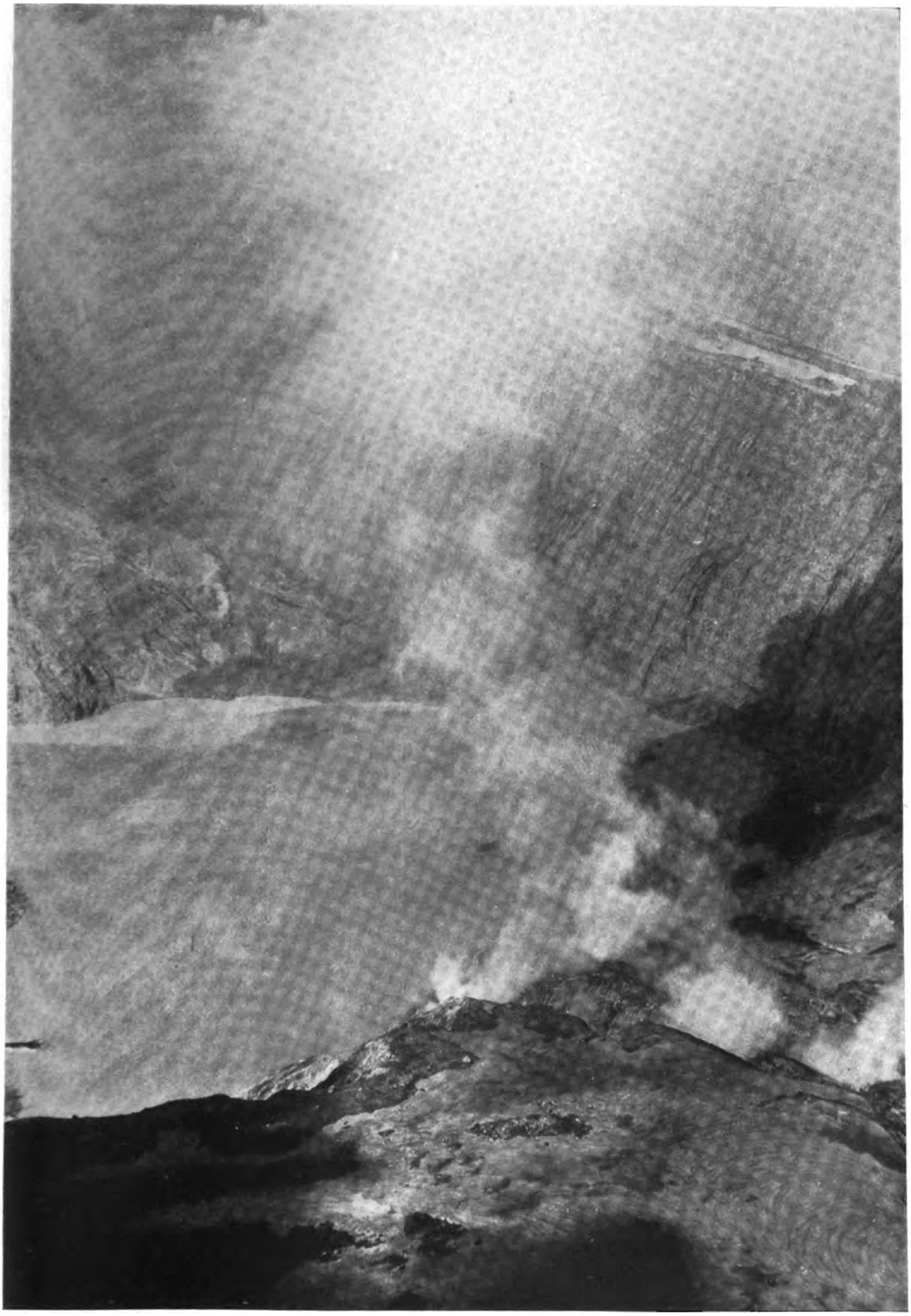
But even such evidences of the power of the wind could not have given us any conception of the terrific violence of the gales if we had not had the misfortune to experience one. For 48 hours it blew with such fury that we were in constant fear lest our tent should be torn to shreds. I would never have supposed that any tent could have stood up under the strain. We had it double-guyed at each end with our Alpine rope, but were not able to keep the pegs from pulling out at the bottom. We could not have held it down without the floor. Several times we held it in place by lying on the floor until the pegs could be driven in again around the bottom (see also pages 17 and 26).

Only less noisy was the bombardment of the sand-blast, which drove against the tent like showers of hail. The power of the wind was such that pieces of pumice even an inch in diameter were picked up and carried away, while others twice as big went rolling along the slopes.

The wind was so fierce that we could not keep a fire, nor could we have cooked anything if we had, for we no sooner put on a kettle of water than it began to fill with sand, so that it could not be used.

THE SECOND ASCENT

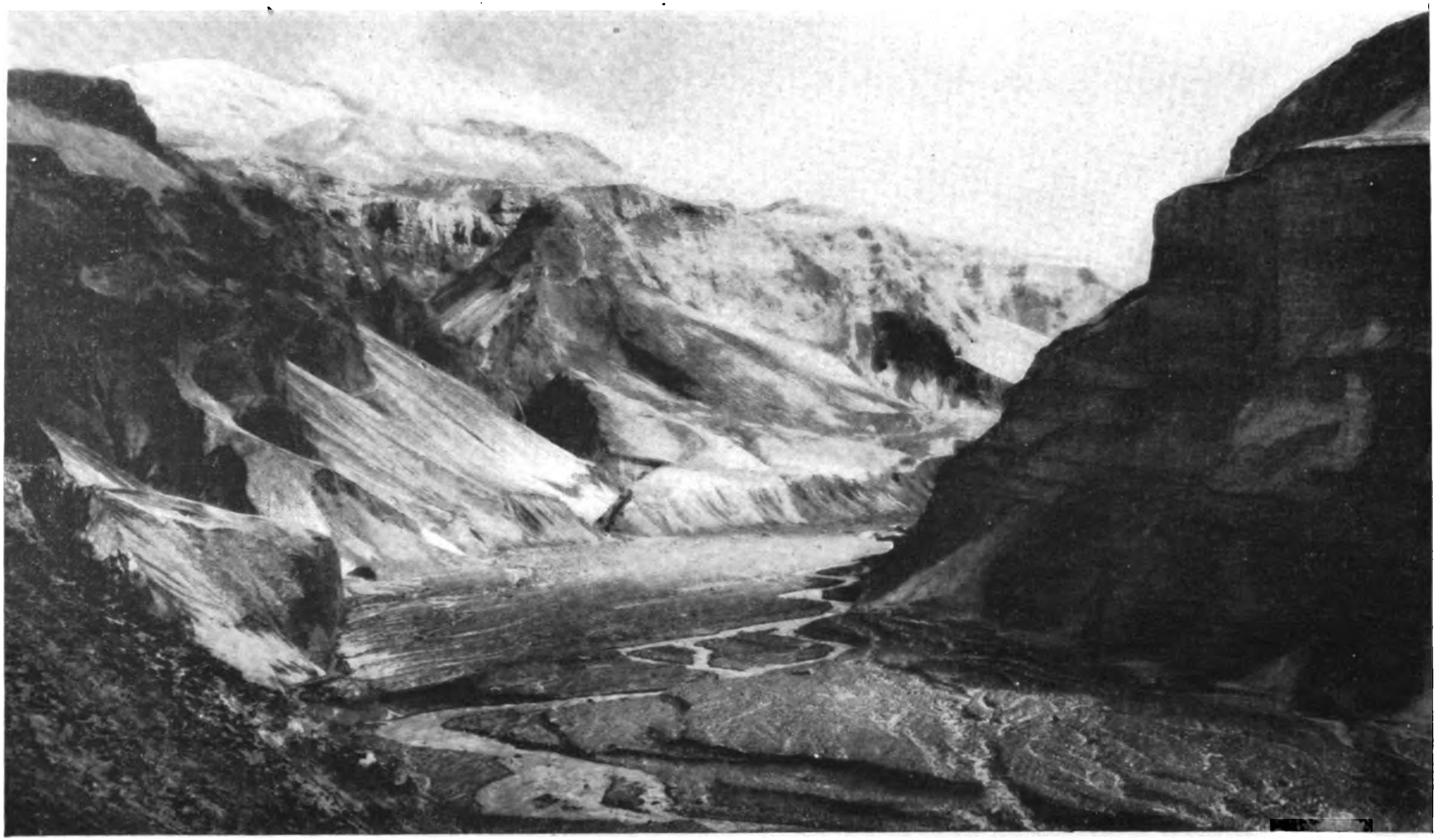
On July 30, for the first time since our arrival in the valley, the steam from Mageik rose straight up into a cloudless sky (see page 30). We therefore decided the conditions auspicious to try for a second view into the crater. This time



Photograph by R. F. Griggs

LOOKING DOWN INTO KATMAI'S CRATER

At the right is the main column of steam, 3,000 feet high. Little jets may also be seen rising from the surface of the boiling lake. Curiously enough, the heat does not melt the snow, which may be seen stretching close up to the escaping steam, its surface grooved by the innumerable rolling-stones which fall in from the cliffs where we stood (see text, page 54).



Photograph by D. B. Church

KATMAI CANYON FROM PROSPECT POINT, ABOUT 500 FEET ABOVE THE RIVER: MOUNT KATMAI IN THE BACKGROUND

The lava flows of the volcano contrast strongly with the sedimentary rocks on the opposite side of the canyon (see pages 53 and 55)

I chose a path over the lava plateau from near the base of the mud-flow. From the valley the ground did not seem especially favorable, and we were by no means sure of reaching the rim when we started; but I was anxious to examine the Trident at close range, and especially to see what might be behind the isthmus connecting it with Katmai, because of our suspicions of activity in that direction.

We got a fine view of Trident, whose crater proved to be a simple fissure, out of which steam was continually issuing in a comparatively small volume (see page 65). But we were disappointed in our hopes of seeing anything over the divide between Trident and Katmai.

Although we traversed the whole length of the nearly level névé at an altitude of about 4,200 feet, we could see no indications of volcanic activity beyond. There were several jagged minor summits, but no large mountain and no clouds; so that we quite dismissed the idea of a volcano in that quarter.

How greatly in error I was in this conclusion I was to find only the next day.

For a good share of the way beyond 2,000 feet our path this time lay across the lines of drainage, which had gashed the level surface of the ash with innumerable gullies anywhere from two to ten feet deep. On our first ascent we had followed straight up a single ridge, and so avoided the necessity of crossing the gullies. This time we soon found that continued jumping across or scrambling up and down the sides of these ravines is very fatiguing and were thoroughly tired of the job long before we got through them.

For the last 1,500 feet our way led across much-crevassed snowfields and glaciers, which, while easier going for the most part, kept us in constant fear of cave-ins on account of the uncertain conditions introduced by the ash-fall. In places we traversed as nasty a series of seracs as one would care to find.

We found that the glacial seracs extended clear up to the very rim of the crater, above whose depths the loose blocks hung with a precarious hold.

We did not dare to approach the edge over such ground and had to make our way around, descending somewhat until we finally reached the rim at the lowest notch, at an altitude of 5,200 feet, beside the rock which breaks the regularity of the arc at that point (see page 56).

This from the valley appears as a small tooth-like projection. Near at hand it is seen to be a great neck of jointed columnar basalt two or three hundred feet high, which evidently owes its preservation to its superior hardness, which enabled it to resist the force of the explosion that blew away the softer rock all around it. Its position and structure indicate that it was formerly a vent filled with liquid lava which, cooling in place, formed the massive neck that remains.

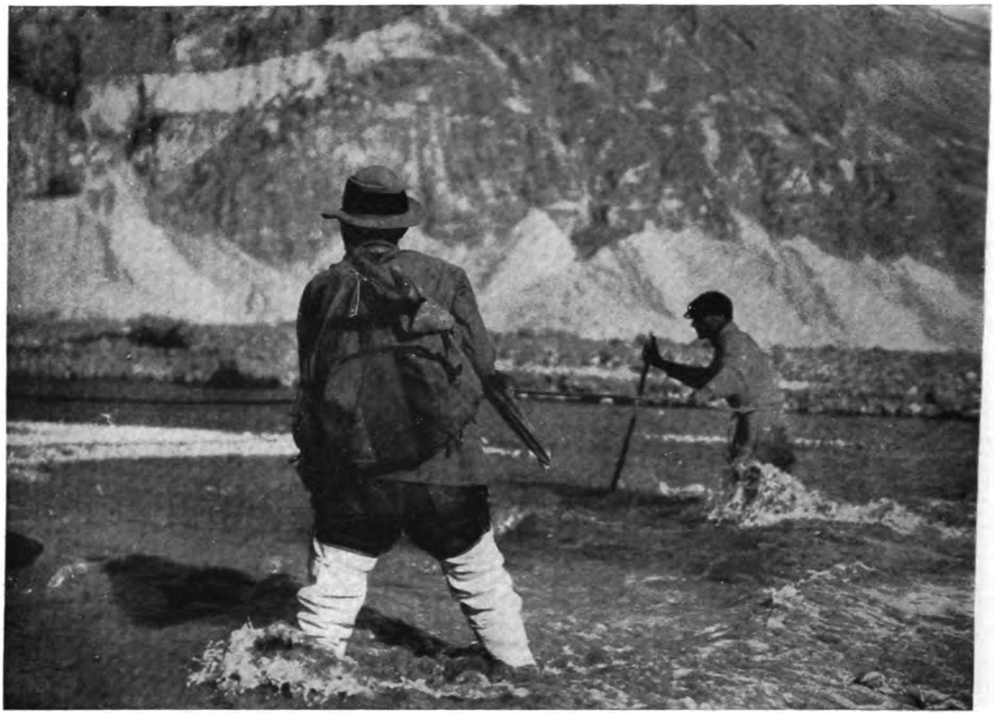
INABILITY TO JUDGE HEIGHT OR DISTANCE

From our position directly under it, its perpendicular cliffs, though insignificant from the valley, appeared immeasurably high! Frequently in this land of stupendous dimensions we had occasion to realize how little conception we could really form of the true sizes of the features around us.

When one stands directly beneath a cliff or at its brink and looks up or down, 200 feet appears as an immeasurably great height. Ten times as much appears no greater unless there are trees, houses, or some such familiar objects beyond, by which one can form an independent judgment of their distance. In a desert country without such objects, we were frequently unable to form any estimate at all of the size of the various features which met our view.

We had an amusing instance of this when, sending a man to climb the great ash slide to serve as a scale for a picture, I found that he was hardly visible to the naked eye and utterly lost in the picture (see page 42). We nearly always found that our estimates were too small rather than too large, and throughout the present paper I have endeavored to scale down my statements of size, so that any errors should be in the direction of minimizing rather than of exaggerating the things we have to report.

Standing on the edge of the crater, we recognized our total inability to form any judgment of its depth by the ordinary



Photograph by D. B. Church

CROSSING ONE OF THE CHANNELS OF THE KATMAI RIVER

While the lower reaches of this river are full of quicksand, farther up it is a rushing mountain torrent, so swift that it was hard to cross even supported on a rope (see text, page 41).

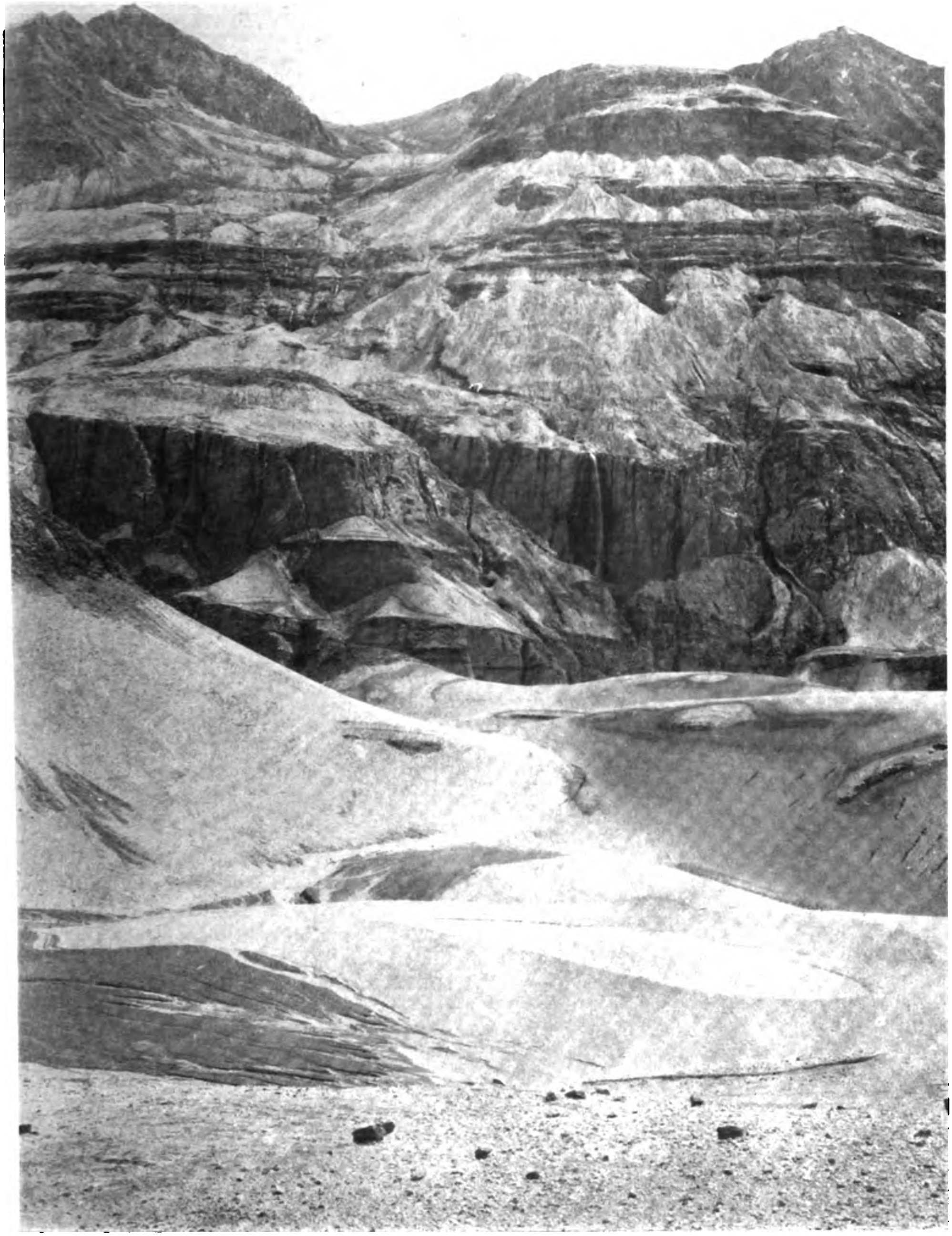
methods one uses in estimating such things. But, using the shape of the volcano as a whole and such differences in altitude of the parts of the crater rim as we could see from the valley for our guide, we concluded that our former estimate must be too small, and that it must be at least 2,000 feet in depth.

THE SECOND VIEW OF THE CRATER

Both the weather conditions and our position were much more favorable for observation of the crater this time than on our first ascent. The sun shone brightly, and it became evident why we had had so much trouble with the steam on the first ascent, for we found that the point which we had reached the first time stood directly above a prominent fissure extending in an easterly direction from the edge of the lake to the crater wall. Its direction was significant in connection with what we were to discover the next day.

The boiling lake this time was all covered with little (so they appeared from our position) wisps of steam curling up everywhere from its surface. The vapor thus given off condensed into a hazy cloud, which hung in the mouth of the crater, so that the part of the rim opposite us was veiled. This haze made it impossible to secure as clear photographs of the crater as we would have wished.

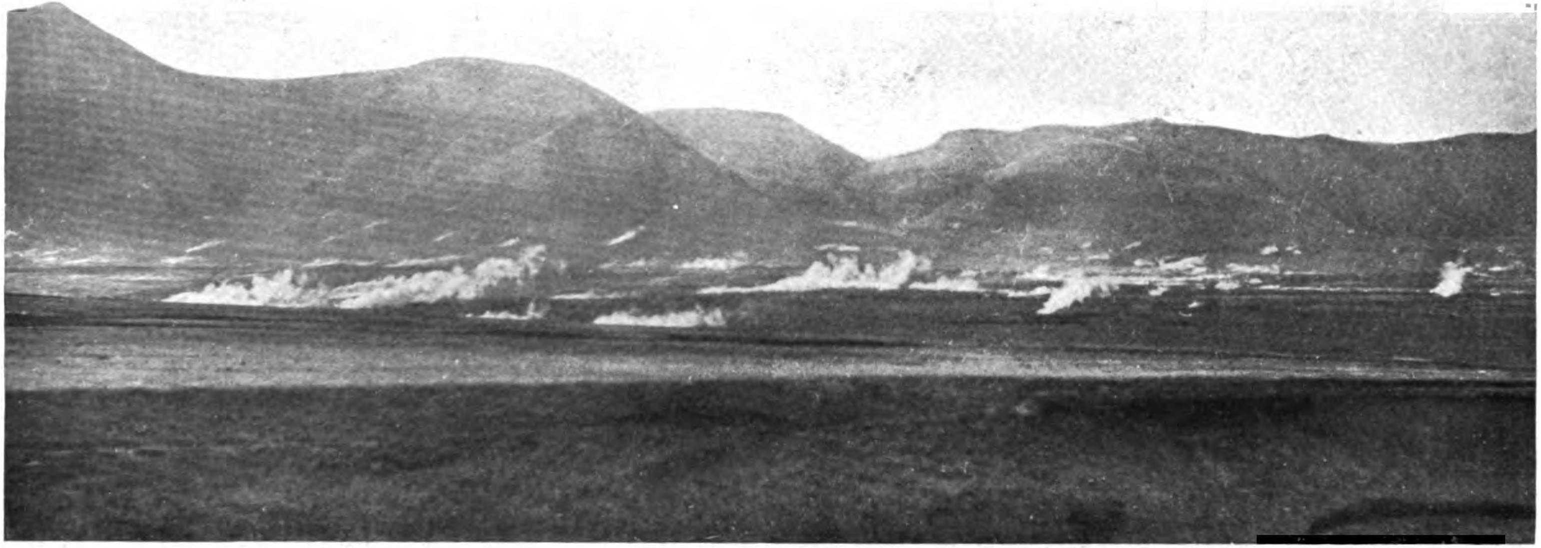
At the northeast angle we could see another low notch in the rim of about the same altitude as the one where we stood. But this one was occupied by a wall of ice which rose perpendicular, flush with the crater walls, as though it had been sheared off by the explosion. It was indeed curious that a moving glacier, however it might have been affected by the eruption, should remain in such a position. It is probably to be accounted for by the falling away of the crater rim, which continually exposes a new section of the ice cliff. As we had made the summit by 3 o'clock, this time we were not so late in getting back, reaching camp again at 8.30.



Photograph by D. B. Church

ACROSS KATMAI CANYON FROM THE LOWER SLOPES OF MOUNT KATMAI

The scale may be judged by the man, who may barely be made out on the trail near the center of the picture. The waterfall is 1,500 feet high.



Photograph by R. F. Griggs

GENERAL VIEW ACROSS THE VALLEY OF THE "TEN THOUSAND SMOKES"

The steam jets are so much spread out that it is not possible to give any idea of their numbers in a photograph. Even in transverse views like this many of the more distant jets are lost in the distance. The strong wind bent them all close to the ground. What a sight it would have been if the columns of steam had risen straight up! (see page 64).

The next day, July 31, dawned as clear and bright as the former; but the cloud from Mageik this time drifted off to the northwest, and small clouds were beginning to gather on the west side of the valley, so that I knew it was to be the last day of good weather.

A MUD-FLOW COVERING TEN SQUARE MILES 80 FEET DEEP

I had hoped to take a two-days' trip across the pass to see if we could find the source of the clouds which had aroused our suspicions. But remembering the bad name given Katmai Pass by Spurr, who states that it was the most difficult pass crossed by his party in their long and adventurous journey in 1898, I had no desire to be caught short of provisions on the wrong side, and so gave up the projected trip and decided to reconnoiter instead. Planning to make an easy day of it, for we were tired after our ascent of Katmai the day before, we climbed around the shoulder of Observation Mountain and descended into the upper valley of Mageik Creek, where we found the largest and most striking accumulation of ash observed anywhere.

The whole flat, occupying a triangular space five miles on a side, was filled many feet in depth by the ash, which had slumped off the mountain sides. One section we traversed was no less than 125 feet thick, and two others 80 feet.

ASCENT TO KATMAI PASS

Having stopped a little while to examine the character of the Mageik mud-flow and to eat our lunch, we made our way forward across the bad lands toward the pass, following now the ridges of the mud-flow, now the bottom of the canyon, which rose in a gentle slope.

As we ascended the valley past the highest peak of Trident, we came into view of the hollow between it and the next peak, from which I had thought several times I saw clear indications of rising steam. The sun was shining into it brightly, so that I could see it all clearly. There was not the smallest puff of steam anywhere to be seen. We were up now to 2,500 feet and could see a long way through the pass, and there was no steam to be seen there either.

So again I concluded, as I had the day before, that we had seen nothing more than the ordinary clouds which gather so easily around the summits of all high mountains.

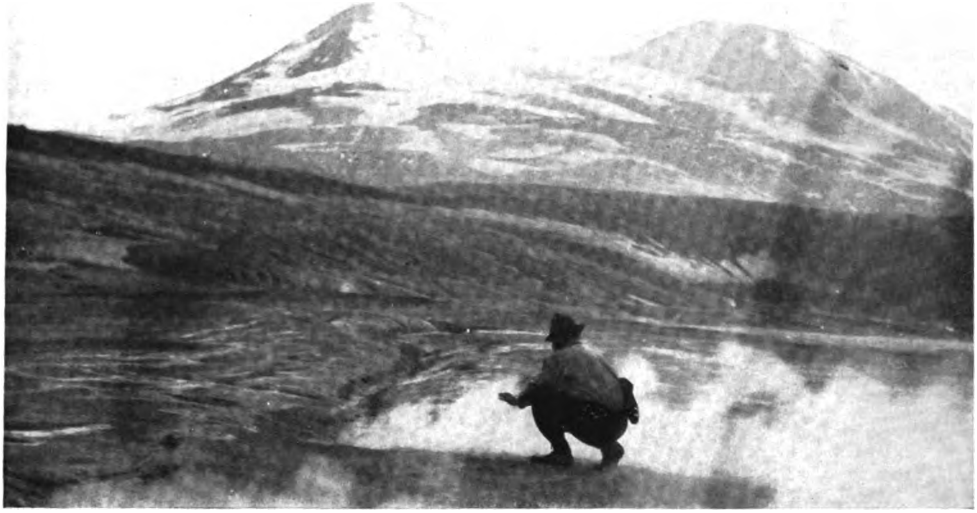
Church, jaded from the continual hard work, had given out and we left him behind with the packs, much against his wishes, several hundred feet below, while Folsom and I went forward a little farther to see what we could discover. We were both tired from our hard climb the day before, and traveling transversely across the gullied "bad lands" of the mud-flow, which was necessitated by the condition of the canyon below, was very laborious; so that I was ready to turn back satisfied with having seen through the pass and, as I believed, having laid another ghost.

THE FIRST FUMAROLE

But just as I was about to suggest turning back to Folsom I caught sight of a tiny puff of vapor in the floor of the pass. I rubbed my eyes and looked again. Yes, there it was, a miniature volcano sending up a little jet of steam right in the pass. When I saw this I decided that we must go on to investigate, because the very smallness of this steam jet made it of as much interest as a large volcano.

For one of the most striking features of the eruption of Katmai—one which was without parallel in other great eruptions—was the absence of subordinate manifestations of vulcanism outside the main theater of action. I had been continually surprised at the absence of parasitic cones, fumaroles, mud craters, hot springs, and the like in so great an eruption.

Earlier in the day we had found the stream from the hot springs near the pass, mapped by Spurr; but aside from that, this fumarole was the first thing of its sort to be observed. When we reached the pass we found its floor all shot through with cracks and small fissures, from which issued half a dozen good-sized jets of steam and perhaps a hundred small ones.



Photograph by L. G. Folsom

WARMING MY HANDS AT ONE OF THE LITTLE FUMAROLES IN THE PASS

The ground was encrusted with bright-colored sublimations from the escaping gases (see text below)

With some trepidation we approached over the fissured surface and discovered that most of the steam issued from small openings a few inches in diameter, whence it came with considerable velocity, giving forth a low, roaring sound.

We could come quite close and warmed our hands in the steam, which, though very hot as it emerged, soon cooled like the vapor from a tea-kettle.

Coming off with the steam were various other substances, which gave rise to curious evil-smelling odors and precipitated a highly colored crust on the ground. Prominent among these was the "rotten-egg" smell of hydrogen sulphide and of sulphur dioxide, while crystals of sulphur gave a yellow tinge to the particolored sublimations of the crust.

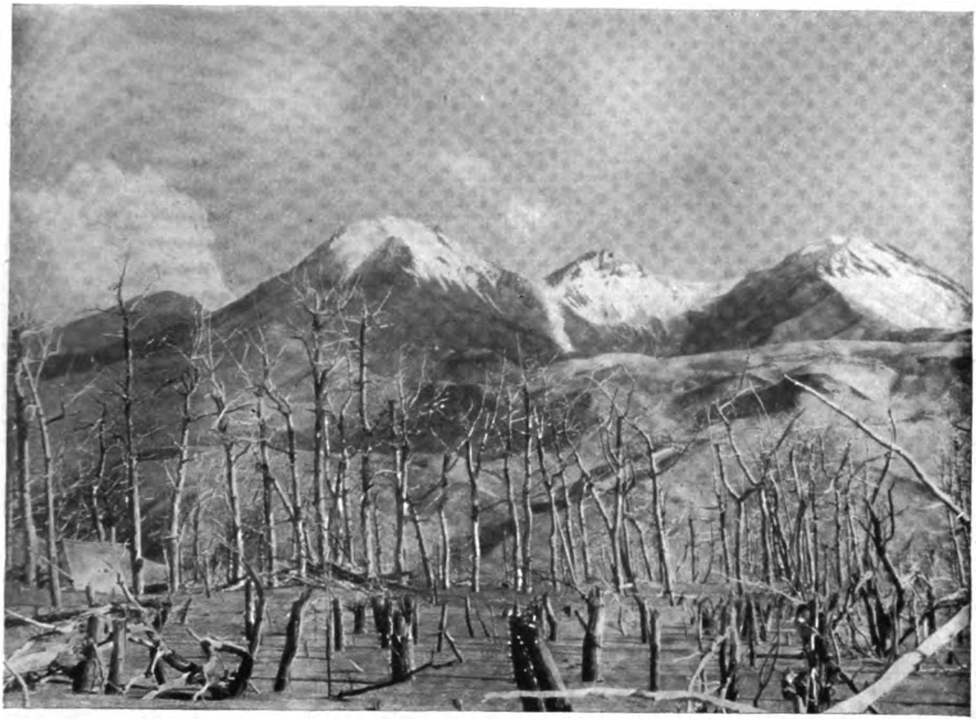
I was anxious to return to Church, for we had already been gone much longer than we had expected when we left him. So, starting to return, I had reached a little eminence, for the fumaroles were just over the pass, when, turning around to urge Folsom to hasten, I saw far down the valley, over the top of some rising ground beyond us, a puff of steam. This had not been there when we came over the pass and was evidently considerably larger than the jets we had been examining, and as the obstructing hill was not far away I decided, late as it was, to go forward and have a look.

THE VALLEY OF THE TEN THOUSAND SMOKES

I can never forget my sensations at the sight which met my eyes as I surmounted the hillock and looked down the valley; for there, stretching as far as the eye could reach, till the valley turned behind a blue mountain in the distance, were hundreds—no, thousands—of little volcanoes like those we had just examined. They were not so little, either; for at such a distance anything so small as the little fumaroles at which we had been warming our hands would not be noticed.

Many of them were sending up columns of steam which rose a thousand feet before dissolving. After a careful estimate, we judged there must be a thousand whose columns would exceed 500 feet (see page 62).

It was as though all the steam-engines in the world, assembled together, had popped their safety-valves at once and were letting off surplus steam in concert. Some were closely grouped in lines along a common fissure; others stood apart.



Photograph by R. F. Griggs

THE TRIDENT FROM THE ISLAND CAMP

The conspicuous column of steam rising behind Trident comes from the "Valley of the Ten Thousand Smokes"

The biggest of all, whose steam had first caught my eye, stood well up on the mountain side, in a nest of fissures which looked like the crevasses of a glacier, and were big enough to be plainly visible, though more than five miles away.

Fortunately a strong wind was blowing across the pass, carrying the fumes all down the valley and away from us, or we might not have dared to go on. In addition to the active fissures, there were thousands more that were quiescent at the time of our visit, but which had encrusted the ground round about with colored deposits like the others. If all of these vents were to be counted, their numbers would undoubtedly reach into tens of thousands.

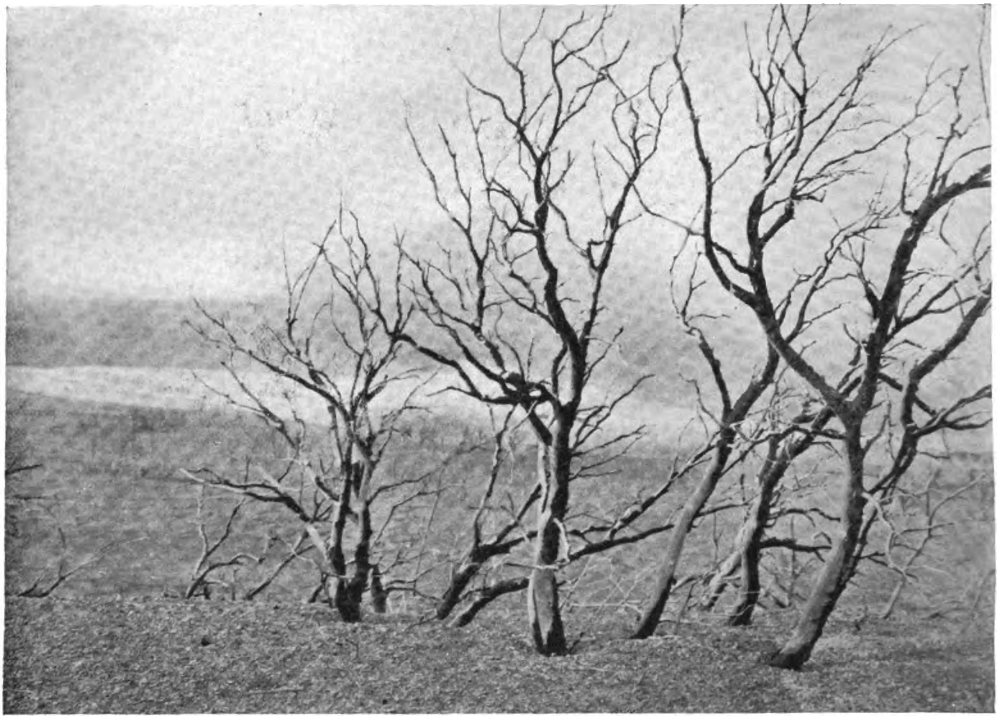
CHARACTER OF THE VENTS

In some cases the orifice from which the steam issued was a large, deep hole; in others there was no opening at all, the steam simply escaping through the interstices of the soil particles. There was no relation between the size of the vent and its output. Some of the largest had no visible opening at all, while from some cavernous holes issued only faint breaths of steam. In many cases steam issued from the sides of the gullies cut by water from the melting snow on the mountain sides where it did not break through the more compact surface layer of mud.

In some places the ground was warm beneath our feet, and had we not been solicitous for our shoe leather doubtless we could have found places as hot as we might have desired.

Although there is every reason to suppose that the vigor of the action is variable, there was in most cases no evidence of explosive action, such as remnants of ejecta around the vent. Most of the steam jets came out of cracks in the level mud floor of the valley. But some, on the contrary, had built up small cones around themselves or formed a small-sized crater by hurling away the ground around the vent.

I wish my vocabulary were adequate to describe the curious mixture of foul



Photograph by D. B. Church

BIRCHES WITH THE BARK CUT OFF BY SAND BLAST

But even such testimony can give one no idea of the terrible severity of the northwest gales. For forty-eight hours one of them bombarded our camp. Every moment we expected the tent to be torn to shreds. We could never have kept it in place had it not been for the floor, which we weighted down when the pegs pulled out. For two nights sleep was impossible, and during the day we could cook no food (see text, page 56).

odors which they gave forth. Mixed with the omnipresent sulphurous gases were others which had a strangely organic smell, recalling at once burning wool, the musky smell of a fox den, and the odors of decay.

We could not tell to what extent, if any, odorless asphyxiating gases, such as carbon dioxide, might be present in the complex. We did not notice any ill-effects from the fumes, but we took good care to keep to windward most of the time.

BRANCH VALLEYS ALSO FULL OF STEAM JETS

Three or four miles down the valley, beyond the mountains next to the pass, we came to a place where lateral valleys come in from both sides at once. Here new wonders awaited us. The southern branch, leading off in the direction of Mount Martin, was full of fumaroles and looked like the main valley. We did not go far enough to see what might lie further up, because of the evident interest of the opposite branch which bore off to the northeast toward Mount Katmai, whose jagged crater walls appeared in full view in the distance.

TWO MORE NEW VOLCANOES OF THE FIRST MAGNITUDE

Up this valley was a prodigious column of steam. As we drew nearer we saw that the main body of this steam was rising from a central mass of rock, surrounded by a comparatively low ring of cinders, the whole extending across the valley and blocking further progress. This I interpret as a plug of lava being slowly pushed up through a vent which was formerly rather violently explosive; so that instead of building a high cinder cone, most of the ejecta were scattered far and wide and only a small ring was formed around the vent.

The surface of the cooling lava plug

was covered in most fantastic fashion with sharp irregular cinders, the result of the too sudden cooling of the molten magma, much in the same way that a piece of melted glass fragments if suddenly plunged into cold water.

Farther on up the valley, on the back side of the isthmus between Katmai and Trident, was another volcano, with a crescent-shaped summit, the side of the crater toward us being open. From this also a considerable body of steam was rising, evidently furnishing part, at least, of the clouds which had excited our suspicions from the other side of the range. Beyond this there may have been yet another volcano, but the rising column of steam from the lava near us obscured the view to such an extent that we could not see clearly.

AN INTERPRETATION OF THE VALLEY OF THE TEN THOUSAND SMOKES

Even the hurried observations we had been able to make were sufficient to bring out distinctly, in its larger outlines, the significance of the phenomenon. It was evident that the valley of the ten thousand smokes is underlain by a great fissure extending northwest from Katmai Pass along the line of the old trail toward Naknek Lake. This might be appropriately denominated the "Naknek Fissure." It is evident that the steam issuing from this fissure and seeping through the mass of accumulations from recent eruptions finds its vent in the myriad fumaroles in a similar fashion to the many small leaks one finds on the surface of an old bicycle tire when there is a single puncture of the inner layer of rubber.

While the main line of this fissure extends up to Mageik, the lateral fissures branch off toward Martin and Katmai. Katmai stands, therefore, like Krakatoa, at the junction of two lines of fissures: one, the Aleutian fissure, which finds its vent in the long line of volcanoes reaching down the Alaska Peninsula and out into the Aleutian Islands, has been long known as one of the greatest lines of volcanic activity on the globe; the other, this newly discovered Naknek fissure, has never been previously recognized and perhaps did not exist before the great eruption of 1912.

That there were no signs of volcanic activity in this direction as recently as 1898 is evident from Spurr's narrative of his journey across the Alaska Peninsula from Naknek to Katmai, which is the only description of the country ever published.

This remarkable valley, like the other volcanic activities of the district, therefore, probably burst forth at the time of the great eruption.

THE RETURN JOURNEY

We had now seen as much as could be observed without extended exploration, so we turned our steps homeward and hurried to rejoin Church, who had shivered for five hours, even with the extra clothes of all three of us. Once across the gullies, which were more than ever a terror to us, now that we were nearly exhausted, we made good speed back to camp, which we reached a little after 10 o'clock.

Here we found that the river, showing the effects of the warm weather on the snow-fields, was beginning to rise so rapidly that we were afraid of being caught miserably on the wrong side. How we wished we could have returned and explored the wonderful valley we had discovered! But we were not equipped for such an undertaking and it was better to get back with what we had than to risk it all for the sake of more. So, hoping that we might be permitted to return and finish the job, we decided on a move, and before 5 the next morning we were up and breaking camp. The event proved that we had lost nothing, for, although the boat to take us back to Kodiak did not come for ten days, only once in that time did the clouds break away again.

Looking back at the work after one has had time to forget the excitement and labor of the daily routine and take a calmer survey of results, the one thing which stands out is the great magnitude of the eruption. Evident from the first reports, this has grown with increasing knowledge. No one, not even those of us who have lived in the desolation of the thing, can form any adequate conception of the stupendous catyclasm that occurred.

This explosion is easily to be ranked among the first dozen known within historic times. Previously Krakatoa has held first place in the minds of most, but the quantity of material thrown out by Katmai was so much greater as to put it into an altogether different class. Indeed, the whole island of Krakatoa could be dropped into the crater of Katmai.

We so inevitably estimate the magnitude of natural phenomena by their effect on human affairs that an eruption like this in an uninhabited district seems unimportant in comparison, for example, with that of Pelee, with its great loss of life. Yet there may have been in the present case tornadoes of hot gas greater than that which overwhelmed St. Pierre and killed 25,000 people; but the destruction by other agencies was so great as to leave little evidence of them if they occurred.

IMAGINE KATMAI'S ERUPTION OCCURRING IN NEW YORK

The magnitude of the eruption can perhaps be best realized if one could imagine a similar outburst centered in New York City. In such a catastrophe all of Greater New York would be buried under ten to fifteen feet of ash and subjected to unknown horrors from hot gases. The column of steam and ashes would be plainly visible beyond Albany, but the continued activity of the volcano would probably prevent any one from approaching for several months to view the ruins nearer than Patterson, N. J.

Philadelphia would be covered by a foot of gray ash and would grope in total darkness for sixty hours. Washington and Buffalo would receive a quarter of an inch, with a shorter period of darkness. Small quantities of ash would fall over all of the Eastern States as far as the gulf coast.

The sounds of the explosions would be heard as far as Atlanta and St. Louis. The fumes would be noticed as far as Denver, San Antonio, and Jamaica.

Not even the most vivid imagination could picture the destruction of life and property which would result from such an eruption in a thickly populated country. We may be profoundly grateful that we have had vouchsafed us such a wonderful opportunity to study the phenomena of volcanoes without any of the horrors usually attendant on their action.

IN VIEW of the extraordinary conditions of the Katmai region, unparalleled anywhere in the world, the Board of Managers of the National Geographic Society has made a further grant of $12,000 for explorations of Katmai during the summer of 1917, the expedition to be in charge of Prof. Robert F. Griggs, who was the leader of the Society's 1915 and 1916 expeditions.

A GAME COUNTRY WITHOUT RIVAL IN AMERICA

The Proposed Mount McKinley National Park

By Stephen R. Capps, of the U. S. Geological Survey

IN THE spring of 1916 a bill was presented to Congress to establish in Alaska the Mount McKinley National Park. This bill was passed by the Senate during the summer, and its final enactment into law now requires favorable action by the House and the President. Before this article is published the necessary legislation may have been completed and the dream of this new park have become a reality; but in any event every one of us who loves outdoor life should realize what a wonderful country—a country of impressive mountain scenery and big game—we have in that northern territory, and how seriously the wild life of that region is menaced.

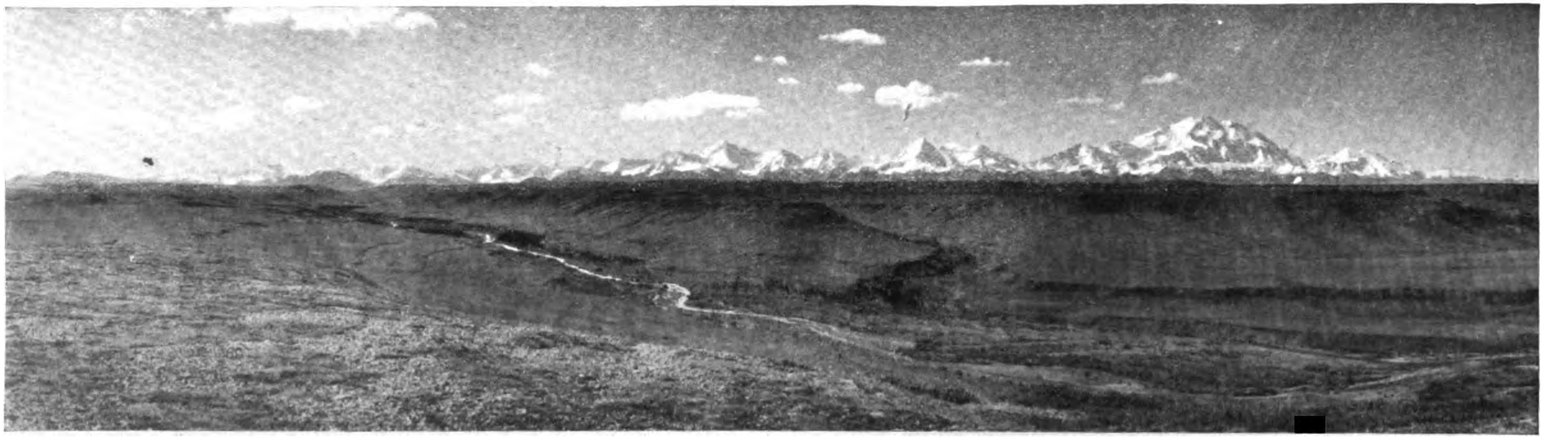
Two parties from the U. S. Geological Survey were detailed to a part of the proposed park in 1916. We proceeded into interior Alaska by the usual route down Yukon River, and disembarked at the new town of Nenana, at which place construction on the new government railroad is in progress.

The 55-mile trip over a little-used trail up Nenana River was eventful enough. We had only a badly damaged and leaky boat to cross that swollen and turbulent stream, and for the better part of a day the horses refused to swim the icy torrent. Then, too, in the forested lowlands the mosquitos surrounded us in clouds. We could protect ourselves with gloves

Photograph by J. S. Sterling

HAULING LOGS VIA THE "CANINE" ROUTE IN ALASKA

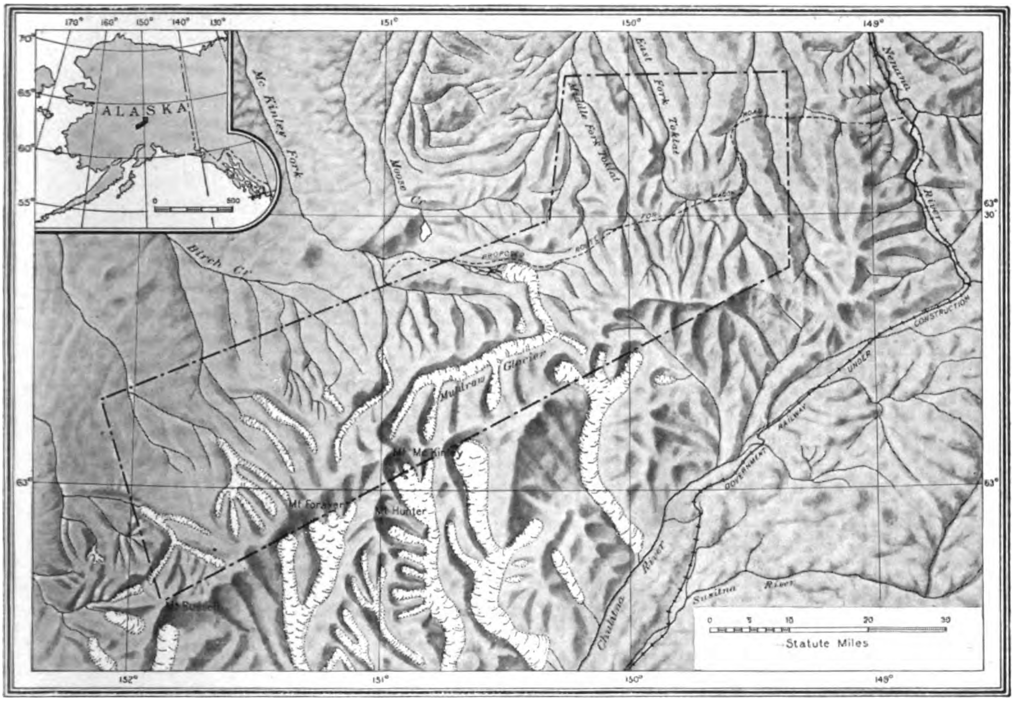
THE STUPENDOUS ARRAY OF SKYSCRAPERS NATURE ERECTED IN THE ALASKA RANGE, VIEWED FROM STONY CREEK



Photographs by C. E. Giffin

THE CREST OF THE ALASKA RANGE, FROM THE FORKS OF MOOSE CREEK: MOUNT MC KINLEY TOWERS ON THE RIGHT

"In scenic grandeur the stupendous mass of which Mount McKinley is the culminating peak has no rival" (see text, page 71)


ALASKA
Mc Kinley Fork
Moose Cr.
Middle Fork Toklat
East Fork Toklat
Nenana River
Birch Cr.
Proposed Road
Muldrow Glacier
Mt McKinley
Mt Foraker
Mt Hunter
Mt Russell
Government Railway under construction
Chulitna River
Susitna River
Statute Miles
0 5 10 20 30
151°
150°
149°
152°
63°
63° 30'

OUTLINE MAP OF THE PROPOSED MOUNT MC KINLEY NATIONAL PARK, FROM SURVEYS BY THE U. S. GEOLOGICAL SURVEY

and head nets, but the horses were constantly covered with the insects, so that all of them—white, bay, and black—took on the dirty gray color of the mosquitos themselves.

We began our surveys at Nenana River, east of the park, and extended them westward over several thousand square miles.

We had spent only a short time in the field when we discovered that the park had been laid out in a most admirable way. It is true that there is fairly abundant big game and much country of great scenic beauty outside the boundaries, but we entered a game paradise and a land of unrivaled scenery when we crossed the park line. Singularly enough, too, when we were once within the high mountains of the park we left behind us most of the mosquitos, and for a month were almost free from the exasperating attacks of these annoying pests.

When, in the spring, we had first learned of the proposal to establish this park and had plotted its outline on the map, we wondered at its curious shape. Once we were on the ground, the reason for this shape became evident. The long dimension follows the general course of the Alaska Range from Mount Russell to Muldrow Glacier, the park including all the main range from its northwest face to and beyond the summit. East of Muldrow Glacier the range widens toward the north and consists of a number of parallel mountain ridges separated by broad, open basins.

THE HIGHEST CLIMB ABOVE SNOW-LINE IN THE WORLD

There, at the headwaters of Toklat and Teklanika rivers, sheep and caribou range in greatest abundance, and the northern part of the park includes the best of the game country. The reëntrant angle in the park line north of Muldrow Glacier was so placed as to exclude the Kantishna mining district and the hunting ground from which the miners obtain their supply of meat. The total area of this great playground is about 2,200 square miles.

In scenic grandeur the stupendous mass of which Mount McKinley is the culminating peak has no rival. The snow-line here lies at about 7,000 feet, and above

Photograph by C. E. Giffin

VIEW SOUTHWEST FROM THE HEAD OF STONY CREEK, ALASKA: LIKE A CLOUD IN THE DISTANCE, MOUNT MC KINLEY RISES SUPREME ABOVE THE RANGE

that elevation only a few sharp crags and seemingly perpendicular cliffs are free from the glistening white mantle. From the valley of McKinley Fork, which is at the north base of the mountain and lies at an elevation of only 1,500 feet, the bare rocks of the lower mountains extend upward for about 5,500 feet, and above them Mount McKinley rises in majestic whiteness to a height of 20,300 feet—the loftiest peak on the continent.

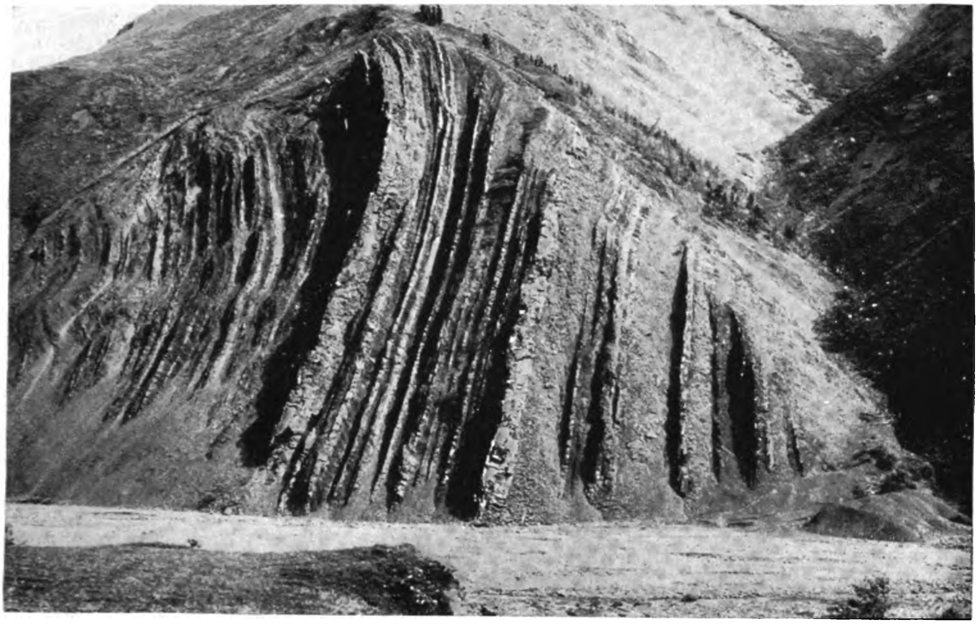
The upper 13,000 feet of the mountain is clad in glaciers and perpetual snows, thus offering to the mountaineer the highest climb above snow-line in the world. The rise of 18,000 feet from the lower end of Peters Glacier, north of the mountain, to the highest peak is made in a distance of only 13 miles. In no other mountain mass do we find so great a vertical ascent in so short a distance. The peaks of the Colorado Rockies, though wonderful, rise from a high plateau, so that at most points from which they can be seen they stand only 7,000 or, at most, 8,000 feet above the observer. Mount St. Elias, an 18,000-foot mountain, may be seen from sea-level, but the peak stands 35 miles from the coast, and so loses in height to the eye by the distance from which it must be viewed.

Similarly the high volcanic peaks of Mexico and South America and the world's loftiest mountains in the Himalayas rise from high plateaus, which diminish by their own elevation the visible magnitude and towering height of their culminating peaks.

THE ARTIST'S COLOR BOX IS SURPASSED

Southwest of Mount McKinley, 15 miles away from it, stands Mount Foraker, only 3,300 feet lower and almost equally imposing. If it stood alone, Mount Foraker would be famous in its own right as a mighty peak, having few equals; but in the presence of its giant neighbor it is reduced to secondary rank.

These two dominating peaks, standing side by side and known to the interior natives as Denali and Denali's Wife, far outrank the flanking mountains to the northeast and southwest, among which, however, there are a score of other peaks that rise to heights between 7,000 and 14,000 feet, well above snow-line, and that are the gathering ground for many glaciers.



Photograph by S. R. Capps

THE MASSES OF SEDIMENTARY ROCKS, NOW STANDING VERTICAL, GIVE A HINT OF THE TITAN FORCES THAT BUILT THE RANGE

Of the glaciers that the tourist will visit in the park, the largest and most accessible is Muldrow Glacier. This ice-tongue, 39 miles long, flows from the summit of Mount McKinley and makes a great fish-hook curve to the northeast and north.

Not the least impressive feature of this part of the Alaska Range is the tremendous scale upon which the foundations of the earth are exposed to view. Especially in the valley heads, where vegetation is sparse or lacking, the high mountain ridges, cut by deep valleys, offer impressive sections for the study of the earth's structure.

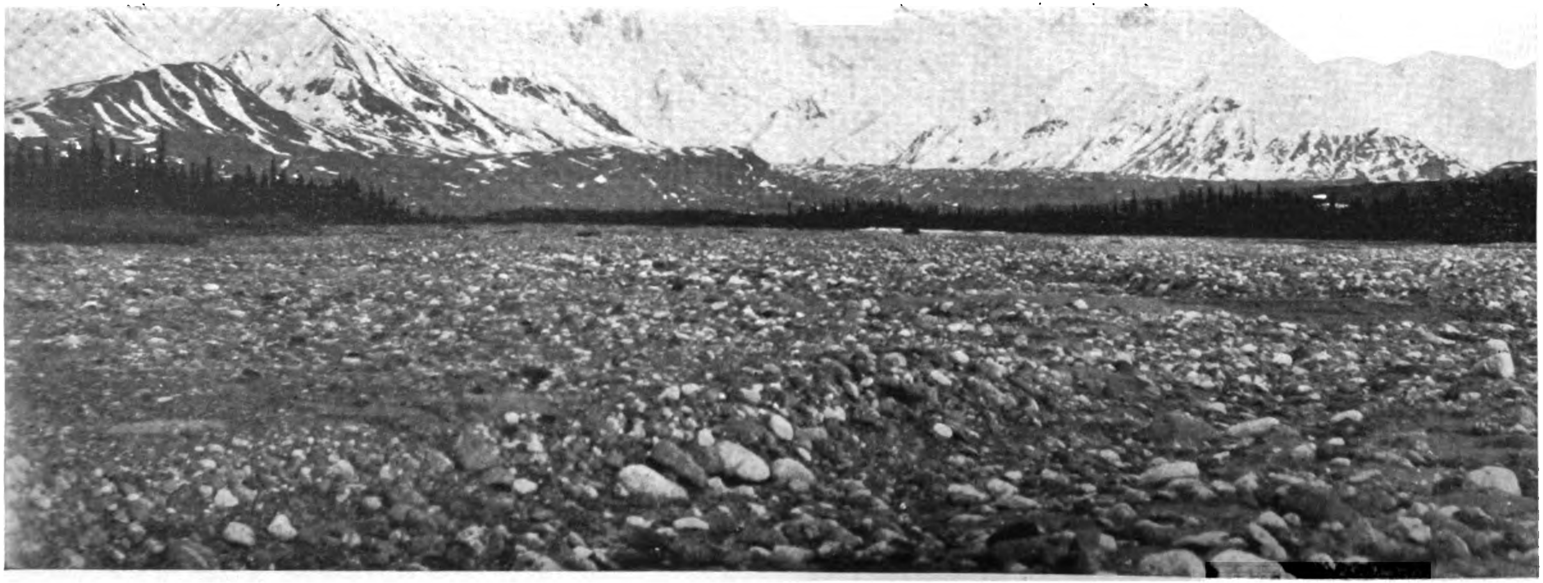
Here great lava flows and volcanic intrusions, in vivid shades of red, purple, brown, and green, will tax the color box of the artist. Masses of sedimentary rocks, first deposited as flat-lying beds, but now standing vertical or twisted into giant folds, give a hint of the Titan forces that build a mountain range.

And near the eastern border of the park, at the Nenana coal field, the traveler can see how Nature, by her generous placing and preservation of coal within the rocks, makes possible the industrial prosperity of our nation by furnishing the fuel needed for its manufactures.

OUR LAST CHANCE

The Mount McKinley region now offers a last chance for the people of the United States to preserve, untouched by civilization, a great primeval park in its natural beauty. Historically this country is new. It was not until 1897 that W. A. Dickey, after having explored in the upper Susitna basin the previous summer, published a description of Mount McKinley, made his remarkably accurate estimate of 20,000 feet as the height of the mountain, and gave it the name it now bears. In 1898 the first actual survey in the neighborhood of the park was made near its east side by George H. Eldridge and Robert Muldrow, of the United States Geological Survey. In 1899 an army expedition, in charge of Capt. Joseph S. Herron, explored a part of the area near the southwestern boundary of the park.

In 1902 the first surveying party that actually reached the vicinity of Mount McKinley was conducted by Alfred H. Brooks and D. L. Raeburn, of the Geological Survey. This party entered the park at its southwest border and traversed it from end to end, bringing out the first authentic information in regard to an unexplored area of many thousand



Photograph from James Wickersham

MOUNT MC KINLEY, THE TOP OF THE NORTH AMERICAN CONTINENT

"The upper 13,000 feet of the mountain is clad in glaciers and perpetual snows, offering to the mountaineer the highest climb above snow-line in the world" (see page 72)

Photograph by Fred Fenton

COAL BEDS NEAR THE EASTERN END OF THE PARK

"At the Nenana coal field the traveler can see how nature, by her generous placing and preservation of coal within the rocks, makes possible the industrial prosperity of our nation by furnishing the fuel needed for its manufactures" (see text, page 73).

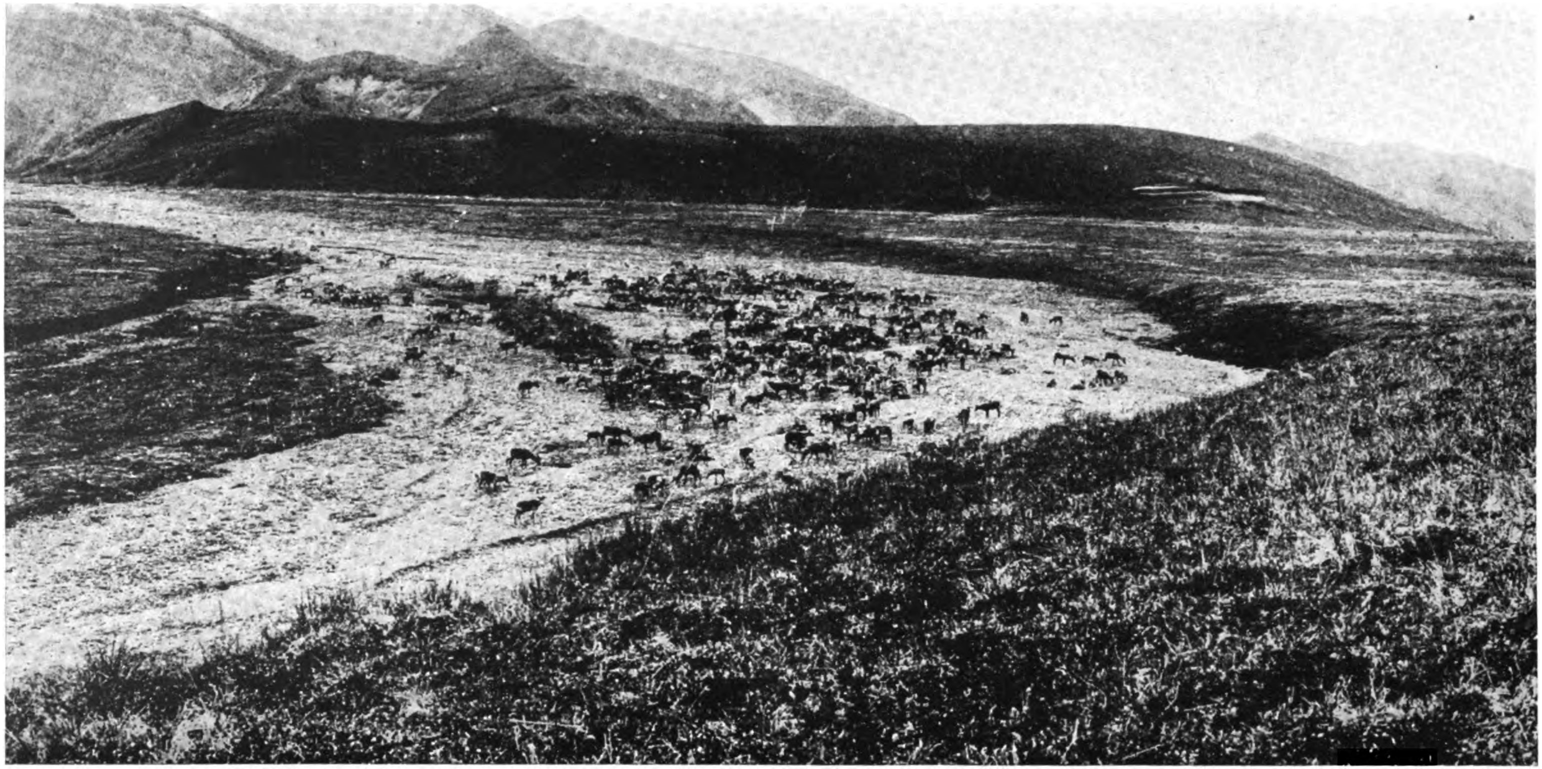
square miles and determining the position, height, and best route of approach to the base of Mount McKinley.

Inspired by the information furnished by the Brooks party, the first attempt to climb this great mountain was made in the summer of 1903 by James Wickersham, now delegate to Congress from Alaska and sponsor for the pending bill to create this great national park. Judge Wickersham's party succeeded in reaching an elevation of 10,000 feet, but a lack of proper equipment and sufficient provisions prevented them from climbing to the summit.

The highest peak remained unconquered until 1913, when, on March 17, Archdeacon Hudson Stuck, Harry Karstens, and two companions left the mouth of Nenana River, traveled by dog sled to the Kantishna district to pick up supplies landed there by boat in the fall of 1912, and proceeded to the basin of Clearwater Fork, at the north base of Mount McKinley. After preparing their own pemmican from wild meat obtained near camp, they began the actual ascent about the middle of April and reached the peak on June 7, 1913. Thus the mountain summit was scaled seventeen years after its first adequate description was published.

A BIG-GAME PARADISE

As a game refuge the new park includes an area that is unique on this continent, and few regions in the world can vie with it. Many parts of Alaska are famous for big game, and hunters have come half around the world to that territory to obtain trophies of their skill. It has been my good fortune to visit several of the choicest game ranges in Alaska, notably that east of Nenana River, adjacent to the Mount McKinley district, and the much praised White River country. Both of these regions are well stocked with game, but for abundant sheep, caribou, and moose over wide areas neither



Photograph by C. E. Giffin

CARIBOU IN THE PROPOSED MC KINLEY NATIONAL PARK: ALASKA

"We counted with the naked eye over a thousand caribou within half a mile of us, and hundreds of others could be seen too far away for accurate count. Most of them were cows and calves or yearlings, but there were a few old bulls, conspicuous for their towering horns" (see text, page 77).

of them compares with the area within the limits of the new game preserve.

The mountains at the head of Toklat and Teklanika rivers literally swarm with the magnificent white bighorn sheep, which are elsewhere extremely wary and difficult to approach, but which in summer are here so little disturbed that they move off only when one comes to close range. A day's travel along one of these valleys will usually afford the casual traveler a view of many bands of sheep. The sheep range on the lower slopes of the mountains, especially in the upper reaches of the streams, near the glaciers at the valley heads, or even in the valley bottoms.

I have counted over 300 in a single day's journey of 10 miles along the river bars, and doubtless as many more were unobserved in the tributary valleys beyond my view. From a single point at my tent door one evening I counted nine bands of sheep, containing in all 171 animals.

The bighorn sheep prefers the slopes of high, rough mountains for its range, and may be found only in the mountains, within easy reach of rugged crags, to which it may retreat for safety from its enemies. Its range, therefore, lies between timber-line and the level of perpetual snow. It is difficult to make an accurate estimate of the number of sheep within the new park, but in the part that we visited there are easily 5,000 sheep, their range extending westward throughout the mountainous portion of the park.

THOUSANDS OF CARIBOU EVERYWHERE

I remember well my first big day for caribou. The pack-train had gone ahead to pitch camp at a prearranged spot near the last spruce timber on the main Toklat, and I was examining the rocks a few miles east of the camping place. Herds of sheep were scattered along the ridges, some feeding on the tender grasses, some sleeping in the sun. I was far above timber-line and my view was unobstructed for miles in all directions. With my glass I had already counted half a dozen solitary caribou, all young bulls, grazing among the stunted willows of the stream flats.

Soon my attention was attracted by a sight unusual in this district—a frightened caribou bull, which was running from the direction in which my pack-train had gone. Soon two yearlings came rushing from the same quarter; then a cow and a young calf in full flight, the cow with tongue out and sides heaving and the calf following closely, but in no apparent distress. Then more came, singly or in twos and threes. Soon a lone calf, lost from its mother, passed close to me, uttering plaintive grunts. As I approached the main river valley from which the frightened animals came, I met the main herd, twenty-five or more, walking slowly up a narrow gulch a hundred yards from me, and apparently unworried by the presence of strangers on their range.

During the next few days I saw more caribou than I dreamed existed in any one locality, including a herd of 200 which was viewed at close range on the Toklat bars. In the pass between Toklat and Stony rivers the two pack-trains and eight men stood in the midst of a vast herd, scattered for miles in all directions.

CARIBOU AVOID THE MOSQUITO PLAINS

We counted with the naked eye over a thousand within half a mile of us, and hundreds of others could be seen too far away for accurate count. In order not to exaggerate, even to ourselves, we estimated the number in sight at one time as 1,500, and I believe that this is an understatement of the number actually there. Most of them were cows and calves or yearlings, but there were a few old bulls, conspicuous for their towering horns. During the following week we constantly saw herds of caribou, some of them numbering hundreds.

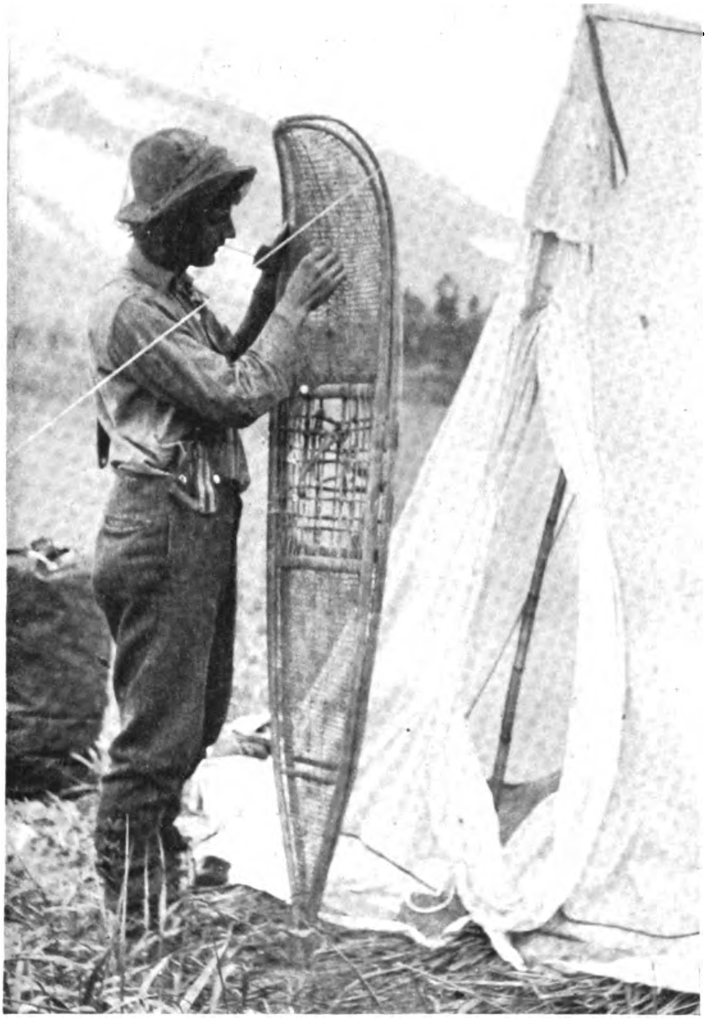
Most of these herds were on the bare gravel bars, where the strong winds afford some relief from the attacks by flies and mosquitos. Other herds were high on rugged mountain ridges, and several large droves were observed far up on the glaciers, well toward snow-line, seeking a little respite from insect pests.

In other parts of Alaska caribou at times appear in huge droves as they migrate from place to place, but they stay from the Kantishna report that caribou may always be seen in great numbers on this range.

There is a striking difference between the actions of caribou and those of the bighorn sheep when surprised by man. A sheep, once aroused, knows exactly where he wants to go, and usually starts, without a moment's hesitation, on the shortest route to some rugged mountain mass. He may stop to look around and appraise the danger, but he is sure to follow the route he first chose.

By contrast, the caribou appears a foolish animal; he seems at a loss to decide whether it is necessary to run away at all. Then, when convinced that danger threatens, he has difficulty in making up his mind which way to run. He has sharp eyes for any moving object, but evidently refuses to trust his sight until his nose confirms his sense of danger.

I have many times seen a caribou, after he has discovered me at a distance of no more than 100 yards, stand and look, snort, lower his head half a dozen times, then run wildly off for a short distance, turn back toward me, repeat the same maneuvers, and make several false, zigzag sprints, all within easy gunshot, before he finally ran to leeward, got the man scent, and started off for good in great panic. In this region, with proper caution and a favoring wind, one can approach within 200 yards or less of a band of caribou, even in the open, before they take alarm and move away.



Photograph from Dora Keen

SIX-FOOT YUKON SNOW-SHOES

For breaking a trail or crossing wide crevasses they are the ideal type, but for climbing steep slopes or traveling where they have to be carried considerable distances they are too long and cumbersome.

only a short time in any one locality. In the Toklat basin and in the vicinity of Muldrow Glacier, however, the caribou are at home, and they remain there throughout the summer to rear their young.

DIFFERENCES IN ANIMAL BEHAVIOR

There is abundant indication that this is a permanent range. Deeply worn trails form a veritable labyrinth along the stream flats, and bedding grounds, old and new, occur everywhere. The miners

MOOSE ARE WARY ANIMALS

Moose are very plentiful in certain parts of the new park, but are not so commonly seen as sheep and caribou. As their food supply consists of willow and birch twigs and leaves and the succulent roots of water plants, they stay much of the time in timbered and brushy areas, where they are inconspicuous. By nature, too, the moose is a wary animal and permits much less familiarity than the caribou.

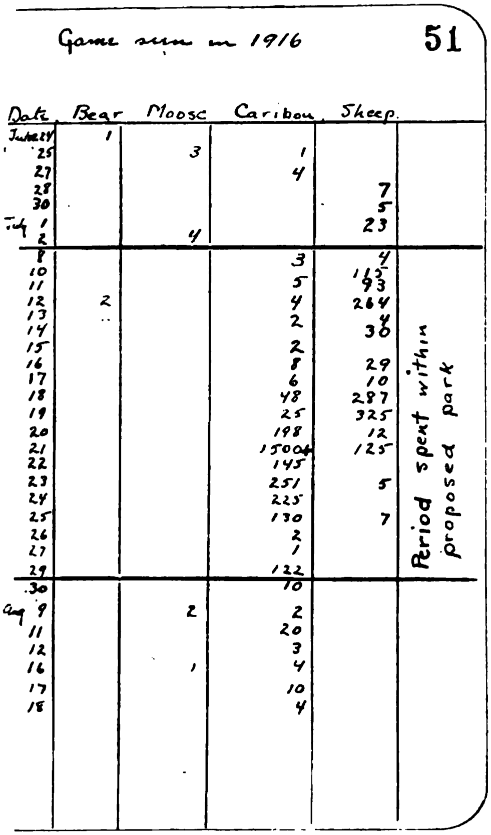
The best moose country in this region lies in the lowlands north of the main Alaska Range, outside of the boundaries of the proposed park; but some moose were seen within the park lines, and doubtless more of them will take refuge in this game preserve when they are more vigorously hunted in the neighboring regions. It is said that there is an excellent moose range within the park, in the area southwest of that which we visited.

There are some black, brown, and grizzly bears in this district, but the bear hunter has a much better chance of obtaining a hide in other parts of Alaska than he has here. All told, only eight bears were seen by the members of the two survey parties during the last summer, and bear sign was so little noted in this region that it cannot be considered an especially good bear country.

The park contains good trapping grounds for the fur hunter, and a number of trappers spend part of each winter there. Foxes are plentiful, and an unusually large proportion of the pelts taken are of silver gray or black fox. One trapper told me that in Toklat basin the winter's catch for a number of years has yielded one silver gray fox skin for every eight foxes caught, and of the remaining seven, several are likely to be good cross-fox. We saw a good many foxes and found two dens around which young ones were playing. Lynx are also plentiful, and numerous mink, marten, and ermine have been taken.

MANY AND BUSY BEAVERS

Beaver were seen in the park, but are exceptionally abundant in the marshy lowlands north of it. On our trip down Bearpaw River, in the fall, while we were on our way to Tanana, we saw everywhere along the banks signs of beaver.



Game seen in 1916

51

Date	Bear	Moose	Caribou	Sheep	
June 24	1				
25		3	1		
27			4		
28				7	
30				5	
July 1				23	
2		4			
8			3	4	Period spent within proposed park
10				115	
11			5	93	
12	2		4	264	
13			2	4	
14				30	
15			2		
16			8	29	
17			6	10	
18			48	287	
19			25	325	
20			198	12	
21			1500+	125	
22			145		
23			251	5	
24			225		
25			130	7	
26			2		
27			1		
29			122		
30			10		
Aug 9		2	2		
11			20		
12			3		
16		1	4		
17			10		
18			4		

A PAGE FROM THE AUTHOR'S DIARY, SHOWING GAME SEEN IN AND NEAR THE PROPOSED PARK (SEE TEXT)

Freshly cut cottonwood and willow trees lie along the shores, and the trails used by the beaver to bring sections of trees down the banks were seen at short intervals.

Night after night we would hear the sharp splash of the swimming animals as they whacked their tails upon the surface of the stream. Beaver are protected by law until 1920, and under this protection have greatly increased in numbers. In the lowlands they have so much obstructed all the smaller streams with their dams that foot travel overland is impossible until ice forms.

In order to give the reader an idea of the abundance and variety of game to be seen by the traveler in the Mount McKinley Park, I am showing above a photograph of a page taken from my diary, in which I each day made record of the big-game animals I saw. In making my

Photograph by R. B. Murray

A TRAPPER'S RELIEF CABIN UP IN THE HILLS: ALASKA

"Every one of us who loves out-of-door life should realize what a wonderful country—a country of impressive mountain scenery and big game—we have in the northern territory, and how seriously the wild life of that region is now menaced" (see text, page 69).

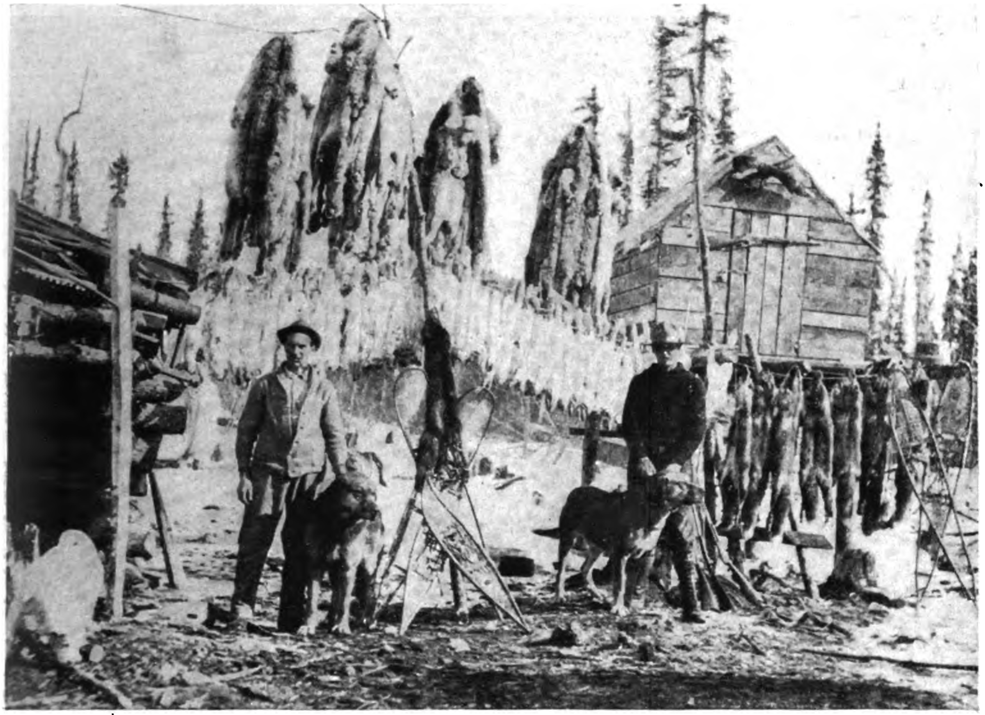
count I was perhaps overmoderate, for if in a trip up a valley I saw 90 sheep, and on my return by the same route I saw the same number, I added nothing to my count, presuming that the sheep last seen were the same as those counted earlier in the day. Thus while traveling among herds of animals that were in constant movement from one feeding ground to another I may have failed to make record of many new herds that came into sight, because I was not sure they were new herds. The same practice was followed in counting caribou.

GAMELESS DAYS ARE RARE

An examination of that diary or record, which was made from day to day in the field, shows how wisely the park lines were established so as to include the best game ranges. Until July 8 we were outside the park, and although we were in a good game country, we saw comparatively few animals on any one day, and on some days none. Our crossing of the park line was coincident with a remarkable increase in the number of animals seen, and afterward there was a steady succession of days in which game was sighted.

The decrease in numbers on July 26, 27, and 28 was due not to a paucity of game in that part of the park, but to a violent rain-storm that kept us in camp. Even then we had only one gameless day, for our record was kept almost unbroken by caribou that passed close to our tents on two of the three bad days.

I have tried to make plain the fact that the area within the proposed national park is a game country without rival in America. That is certainly true today, but unless this game refuge is immediately reserved a few years may see these great herds destroyed beyond hope of reestablishment. Even today the encroachments of the market hunter are serious. True, there are game laws in Alaska, but they are by no means everywhere strictly enforced, and many sled-loads of wild meat are carried into the towns during the winter. The town of Fairbanks,



IN A TRAPPER'S CAMP: ALASKA

Part of a winter's catch, consisting of 74 lynxes (hung in bunches), eight foxes (one silver, four cross, three red); also (hung in center) 54 rabbits, shot in 45 minutes by three rifles while driving through the willows on an island during the winter.

about 100 miles away from the new park, and the largest settlement in the interior, is the destination of most of the wild meat killed on the north side of the Alaska Range. The mountains just south of Fairbanks and east of Nenana River offered a convenient field for the market hunter, and for years large numbers of mountain sheep were killed there for the Fairbanks market.

THE POT-HUNTERS' DESTRUCTIVE TOLL

Within the last few years, however, the sheep herds in the nearer mountains have become so depleted that the hunter has been forced to go constantly farther from his market, and now finds the most satisfactory hunting ground within the limits of the proposed reserve.

I talked with several men who take sheep meat to Fairbanks for sale, and one of them estimated that each winter for the last three years from 1,500 to 2,000 sheep have been taken from the basin of Toklat and Teklanika rivers. Only a part of these reaches Fairbanks, for the sled dogs must be fed during the hunt and on the trail, and some hunters leave behind all but the choicest hind quarters.

It can be readily seen that slaughter on such a scale can last only a short time, until the game here, too, has been nearly exterminated. The sheep, being of choicest flavor, are taken first, but the moose and caribou will not escape after the sheep become harder to get.

The absence of a supply of wild meat in Fairbanks and other interior towns will work no hardship on the residents, for there is already a well-established trade in refrigerated domestic meat, and the dealers will readily supply all the fresh meat for which there is a demand, and at a cost little, if any, above that charged by the market hunters for game.

A BIG-GAME PARADISE 15 MILES FROM A RAILROAD

Such are the conditions today, even in a region so difficult of access. How much more rapidly will the game disappear when the railroad is completed to a point

Photograph by Thomas Riggs

HEADED FOR THE ANNUAL CARIBOU HUNT

Charley Blackfox and family off for the hills. The poles are tent poles, as the hunting will probably be well above timber-line. Note the packs on the dogs.

within 15 miles of this game paradise! The establishment of a town at Nenana, where the railroad crosses Tanana River, has even now brought a market for game some 50 miles nearer the sheep hills of the Toklat.

Already homesteads have been taken up along the railroad, and in a few years this untouched wilderness will hear the sound of the mower and the clatter of railroad trains. If the park is established now, the game can be saved and will remain for other generations to enjoy. If action is postponed a few years, the market hunter and sportsman will have done their work and the game will have gone forever.

Most of the larger streams of the park, heading as they do in glaciers, are so muddy that fish will not live in them. All of the smaller tributary creeks that carry clear water, however, are stocked with grayling and furnish excellent fishing. The grayling, a relative of the trout, is a game fish, rises well to the fly, and affords excellent sport. In texture and flavor it compares well with the trout and is a welcome addition to the menu of the camper.

As will be seen from the photographs, the new park lies almost entirely above timber-line. Trees grow along the valleys of the main streams to an elevation of about 3,000 feet above sea-level, but the timbered areas comprise only a small fraction of the whole. The only trees of importance are the spruce, birch, and cottonwood, and none of these are large. The best patches of trees afford logs big enough for making log cabins, but there is no merchantable timber in the park. Willow brush and some alders grow somewhat farther up the valleys than the trees and enable the camper to find fuel for his fire in some areas where trees are lacking.

THE PARK IS EASILY ACCESSIBLE

On the completion of the new government railroad, now under construction, the park will immediately become accessible. The railroad line runs within 15 miles of the east park line. On leaving Seattle one can then plan to reach Seward or Anchorage within a week, spend a single day on the railroad to the park station, and in another day or two, by saddle-horse, penetrate well into the park and into the midst of its game herds.

With a completed wagon road built from the railway, it should be an easy half day's journey of 80 miles by automobile from the railroad to the center of the park, the whole route traversing mountains of wonderful scenic beauty and teeming with big game.

At the western terminus of the wagon road there will some day be a hotel for the accommodation of tourists and mountain climbers. There, below the terminus of Muldrow Glacier, in constant view of the mighty snow-clad monarchs to the south, one will be able to find complete rest in the grandest of natural surroundings, or will have close at hand tasks of mountain-climbing that will tax the resources of the sturdiest. Few regions offer the inducements to the mountaineer that can be found here.

The highest point of Mount McKinley, the lord of the range, has been scaled but once, and only one route on that vast ice-dome has been explored. Mount Foraker, only less majestic than McKinley and 17,000 feet in elevation, is still unconquered, and associated with Foraker and McKinley there are many peaks that rise from 4,000 to 8,000 feet above the line of perpetual snow (see pictures, page 70).

All this great group of noble mountains, until now so remote as to be impossible of attack except by elaborately prepared expeditions, will be easily accessible to even the modestly equipped explorer. The main highway of travel through the park will pass within 20 or 30 miles of the highest mountains. Thus that bugbear of the climber in so many regions—the task of getting within striking distance of his chosen peak—is here a matter of no great difficulty.

So much for the park itself—its marvelous advantages as a national reserve, its unequaled scenic beauty, and its abundance of big game. I have tried to tell something of what is there for the people of the United States, to be had merely for the taking. The question may be asked, "How necessary is it that this park should be reserved immediately, rather than at some indefinite date in the future? Is there any danger that the park will not keep, even if not reserved?"

The answer is plain and admits of no argument. The scenery will keep indefinitely, but the game will not, and it must be protected soon or it will have been destroyed.

Photograph by Curtis & Miller

AN EDUCATED BEAR AT ST. MICHAEL

WILL IT PAY?

Considered as a purely business measure, without taking account of the esthetic value of such a permanent national reserve in its influence on the development of the American people, the Mount McKinley National Park will be a tremendous financial asset to the territory of Alaska and to the United States as a whole.

Prodigal as nature has been in endowing us with unrivaled scenery, we have until recent years been blind to the money value of this resource. Other nations not so blessed with fertile soils, vast forests, and mines of almost fabulous value have widely advertised their natural beauties in a way to attract the tourist, so that for years American travelers have spent abroad millions of dollars that might have yielded them no less pleasure if they had spent it in seeing America first. The good roads, well-equipped hotels, and beautiful mountains of the Swiss and Italian Alps attract the traveler like a magnet. Even our nearer neighbor on the north, by judicious advertising and careful attention to the comfort of the traveler, attracts great numbers of our people to her western mountains.

If the United States wishes to share in the profits of the tourist business it may readily do so, for any well-chosen expenditure made in building good roads and hotels in our national parks will return large dividends not only in dollars and cents, but in the health, enjoyment, and education of our people. And the traveling public will soon learn that one of the grandest of our parks, one of those most worth visiting, is that which, let us hope, is soon to be established in the Mount McKinley region.

ONE HUNDRED BRITISH SEAPORTS

WITH a deadline of 1,600 nautical miles to guard, measured from headland to headland, 20 miles offshore; with 119 ports, large and small, to seal up, 80 of which, even at low tide, are open to vessels that can navigate 14 feet of water; with a larger number of bays and other navigable indentations to watch than are to be found anywhere else in the world in the same length of straightaway shorelines, Germany's plan to blockade the British Isles seems as near a proposal to accomplish the impossible as anything to which any nation hitherto has committed itself.

Indeed, undertaking to combat at once the sinuosities of a shoreline lending itself better to defense against blockade than any other of equal length in the world and the greatest navy civilization has ever seen, it is difficult to imagine how success could even be hoped for by those putting the plan into execution.

Something of the extraordinary indentations of the shoreline of the United Kingdom may be gathered from the map on page 85.

England is so deeply indented that no part is more than 75 miles from the sea, while Scotland has the most rambling coastline of any country in the world.

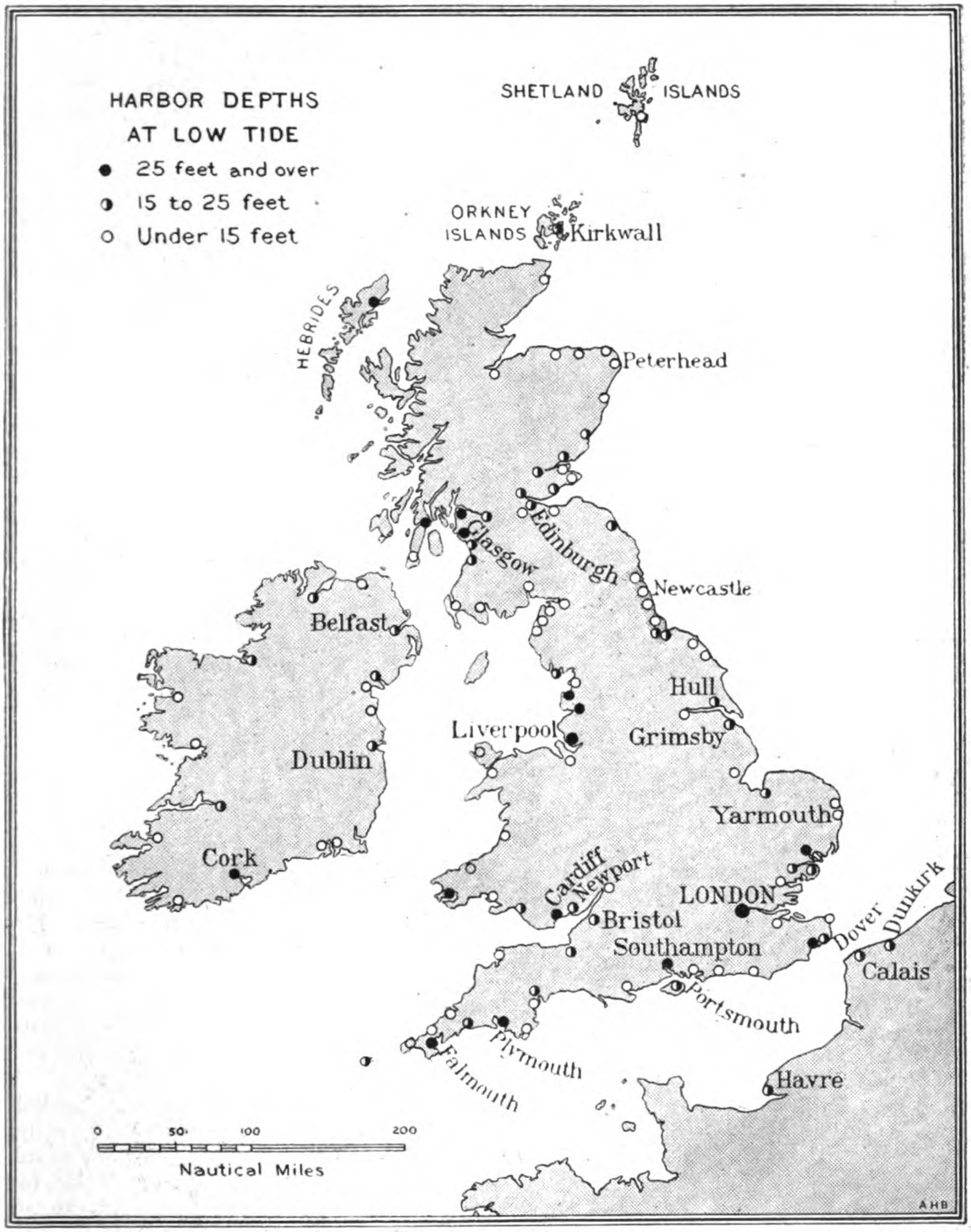
Ireland is not as deeply indented as England and Scotland; but with all that it has shores that make the way of the blockader difficult.

The vast proportions of the British shipping industry which the German submarine blockade is attempting to destroy defies our comprehension. In normal years an average of 214 ships arrive at United Kingdom ports from foreign waters every day in the year. In addition to that, there are 780 arrivals from home ports every day in the year of ships in the coastwise trade.

British merchant ships have a greater aggregate tonnage than those of all the other countries of the world together. The merchant marine of that nation includes nearly 12,000 ships of all kinds. Of these, about 2,800 are sailing ships and 5,300 steam vessels employed in the home trade. There are approximately 4,000 ships engaged in sailing between British and foreign ports. These latter have an average capacity of more than 2,500 net register tons.

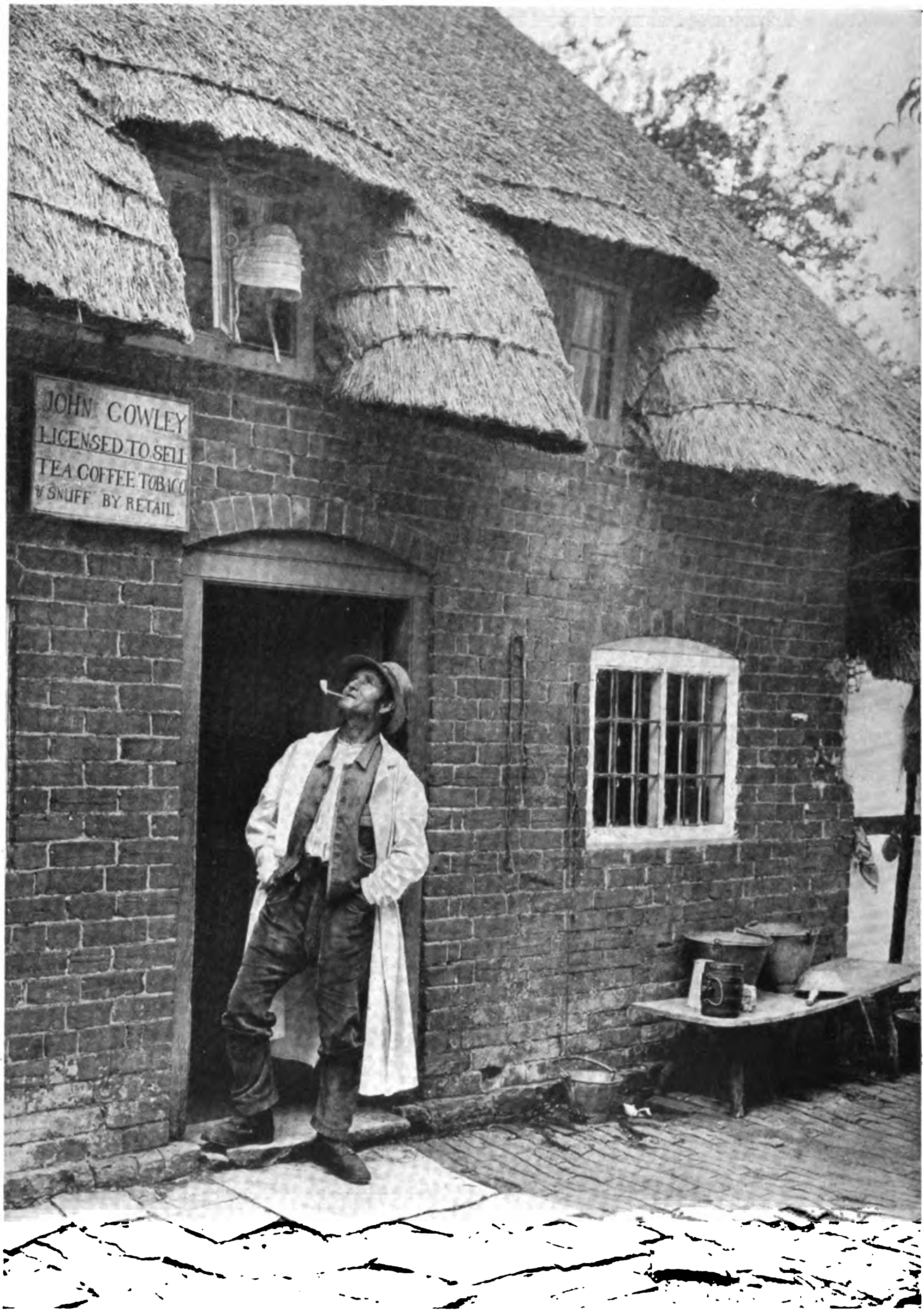
How rapidly Great Britain has been replacing the losses sustained by her shipping as a result of Germany's submarine attacks is disclosed by the fact that at the end of 1916 there were 465 steam vessels under construction in British shipyards, more than half of them being ships of more than 5,000 tons burden. The aggregate capacity of these ships is 1,788,000 tons, so that both in tonnage and in number the new craft are replacing those sunk by the enemy.

Few countries in the world are so dependent on the importation of foodstuffs as the United Kingdom, and for her not


HARBOR DEPTHS AT LOW TIDE
● 25 feet and over
◑ 15 to 25 feet
○ Under 15 feet
SHETLAND ISLANDS
ORKNEY ISLANDS
Kirkwall
HEBRIDES
Peterhead
Edinburgh
Glasgow
Newcastle
Belfast
Hull
Liverpool
Grimsby
Dublin
Yarmouth
Cork
Cardiff
Newport
LONDON
Dunkirk
Dover
Bristol
Southampton
Calais
Portsmouth
Plymouth
Falmouth
Havre
0
50
100
200
Nautical Miles
AHB

SKETCH MAP INDICATING THE MULTITUDE OF BRITISH HARBORS

The United Kingdom and Ireland contain 119 seaports, of which 80, even at low tide, are open to vessels drawing 14 feet of water. At average tide they will admit vessels requiring much greater depths. The seas surrounding the islands are very shallow, making it easy to anchor mines to destroy shipping and also to moor nets to trap submarines. If the waters of Dover Strait were to subside 100 feet, an isthmus would connect England and Holland. If the waters subsided 300 feet, Ireland and the whole of the British Islands would once more be connected to Continental Europe.


JOHN COWLEY
LICENSED TO SELL
TEA COFFEE TOBACCO
& SNUFF BY RETAIL.

Photograph by A. W. Cutler

A RURAL CONVERSATION IN THE HEART OF RUSTIC WORCESTERSHIRE

This primitive old place, by the way, is the post-office at Grafton Flyford. Snuff has never lost its devotees here. Note the sign.

Photograph by Emil P. Albrecht

TOO OLD TO GO TO THE FISHING GROUNDS, BUT STURDY STILL AND FULLY COMPETENT TO MOOR NETS TO TRAP SUBMARINES

To the seas which surround them, the British Islands are indebted for the mildness of their climate, their security from invasion, their commerce, and the wealth yielded by productive fisheries.

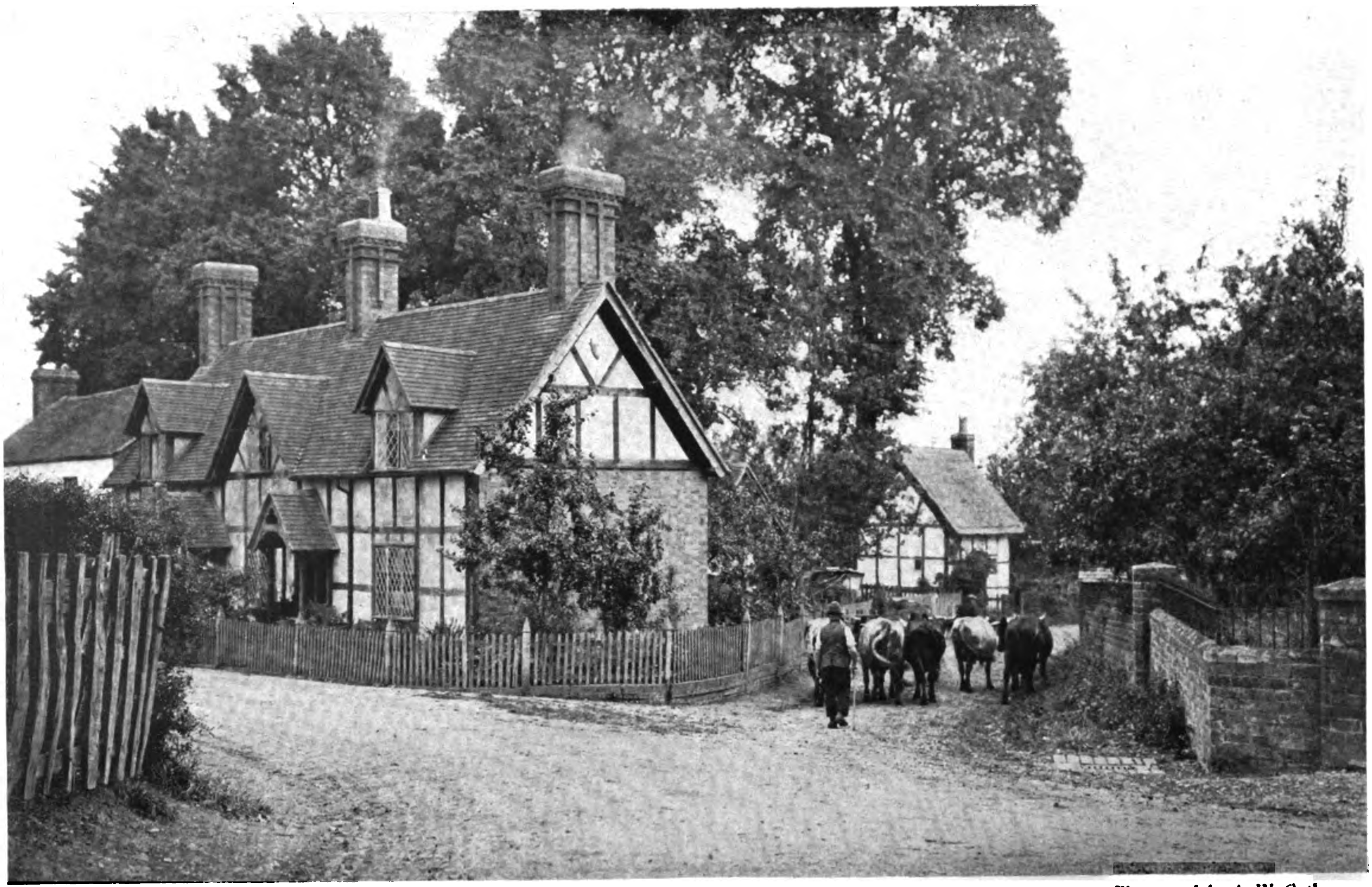
to possess the strongest navy in the world would be to leave her of all nations perhaps the most vulnerable. Probably 90 per cent of all the food her 45,000,000 people consume is brought in by ships engaged in foreign trade.

On the other hand, the splendid coal deposits and the abundant supplies of iron make British industries largely free from blockade dangers. Producing one-fourth of the world's coal, the United Kingdom has little to fear from a coal shortage, no matter what the character of a blockade around her.

The port of London handles approximately one-third of all the exports and imports of the United Kingdom. The ships of the whole world visit it in normal times, and there is scarcely a merchant flag that civilization knows that is missing in the Thames in other than war times.

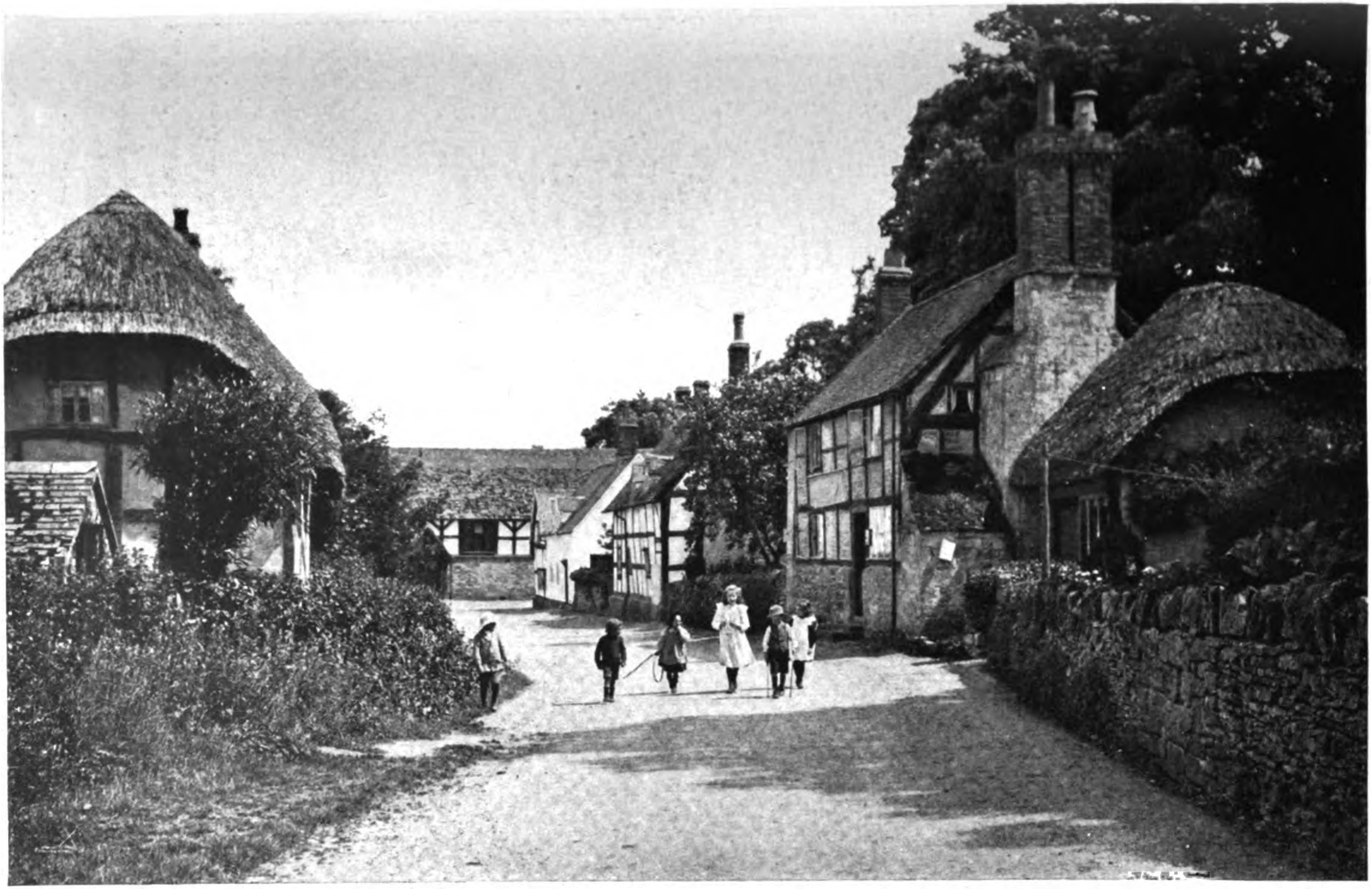
Liverpool has some of the most modern docks in the world. Flanking the Mersey River for a distance of seven miles, the 60 docks, having 26 miles of quay and covering 428 acres of ground, are equipped with every aid known to industry for the rapid handling of the immense quantities of merchandise.

Cardiff is far down the list in the number of ships arriving, but ranks third in



Photograph by A. W. Cutler

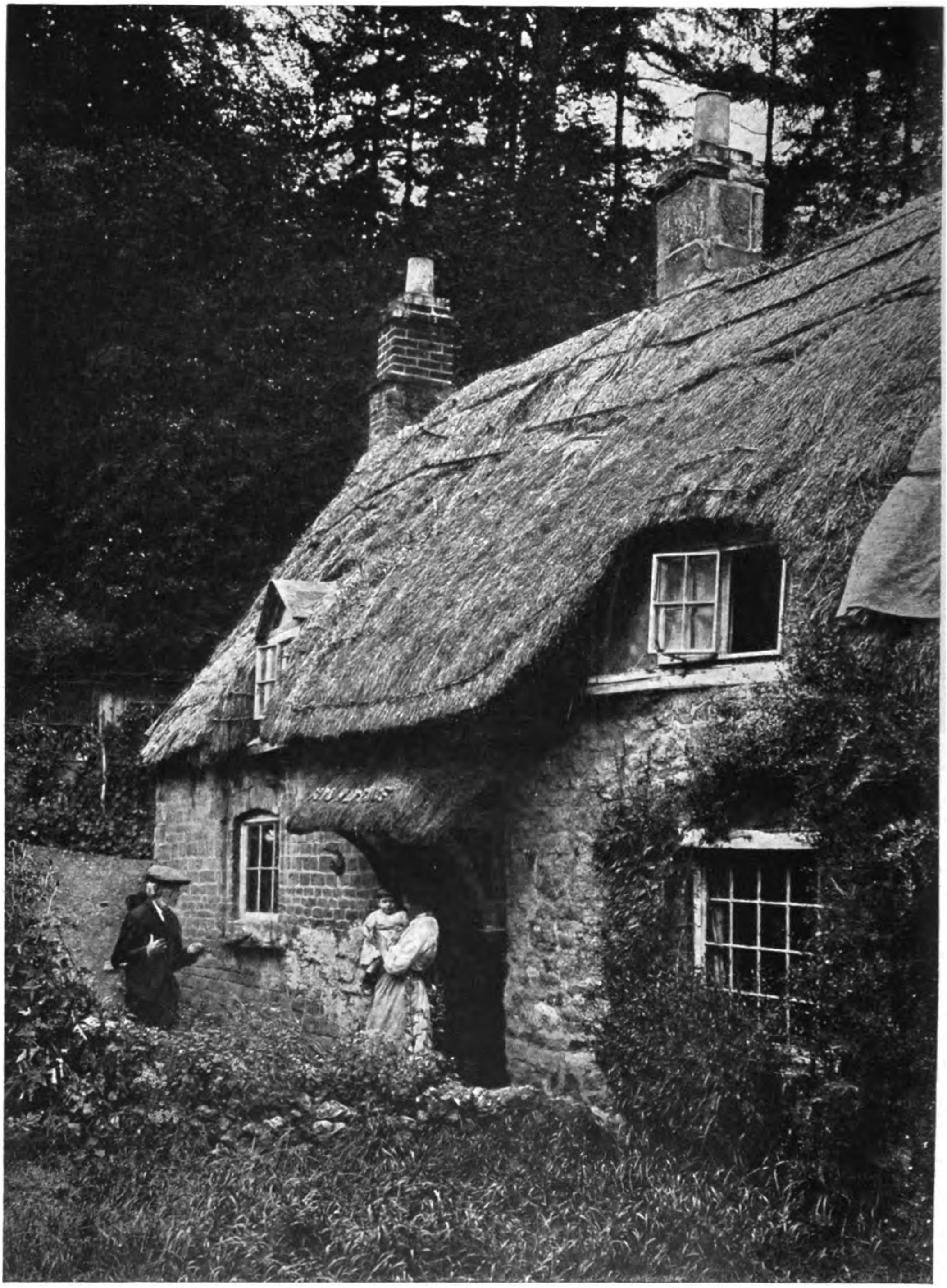
DRIVING HOME THE COWS: A PICTURESQUE SCENE AT THE VILLAGE OF CHURCH LENCH, WORCESTERSHIRE



Photograph by A. W. Cutler

THE CHARMING OLD VILLAGE OF ELMLEY CASTLE, WORCESTERSHIRE

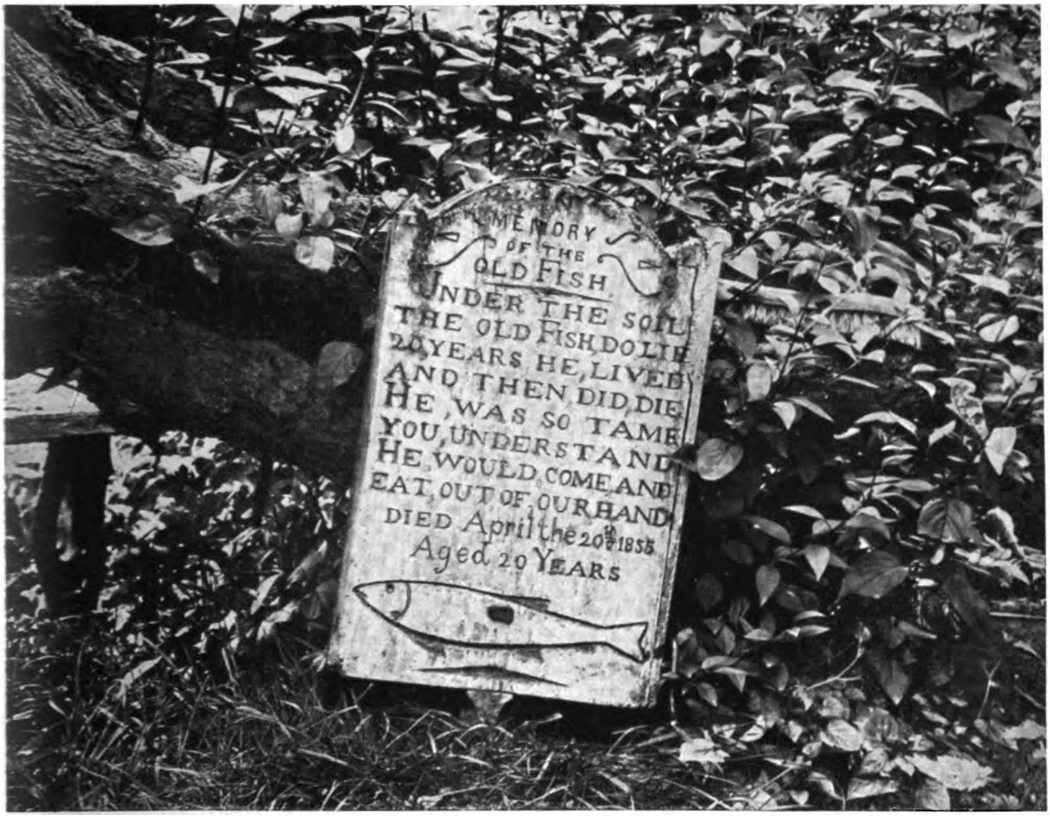
Practically every cottage is half-timbered and thatch-roofed, and most of them have pretty little gardens, entered by wicket gates. The village is very old and remains about as it was in Cromwell's time, when the place was prominent. Some of the houses are built with stone from the old castle, which is now no longer to be seen.



Photograph by A. W. Cutler

"FISH COTTAGES": BLOCKLEY, WORCESTERSHIRE

Here for 70 years Mrs. Keyte lived with her family. Close by is a trout pond. One of the fish became so tame that it would eat worms from its mistress' hand. The cottage is over 300 years old (see next page).



Photograph by A. W. Cutler

AN EXTRAORDINARY TOMBSTONE TO A TROUT

Erected by Mrs. Keyte, of Fish Cottage, Blockley, Worcestershire. The stone recites the story of the trout. Few people would believe this of any fish but a trout.

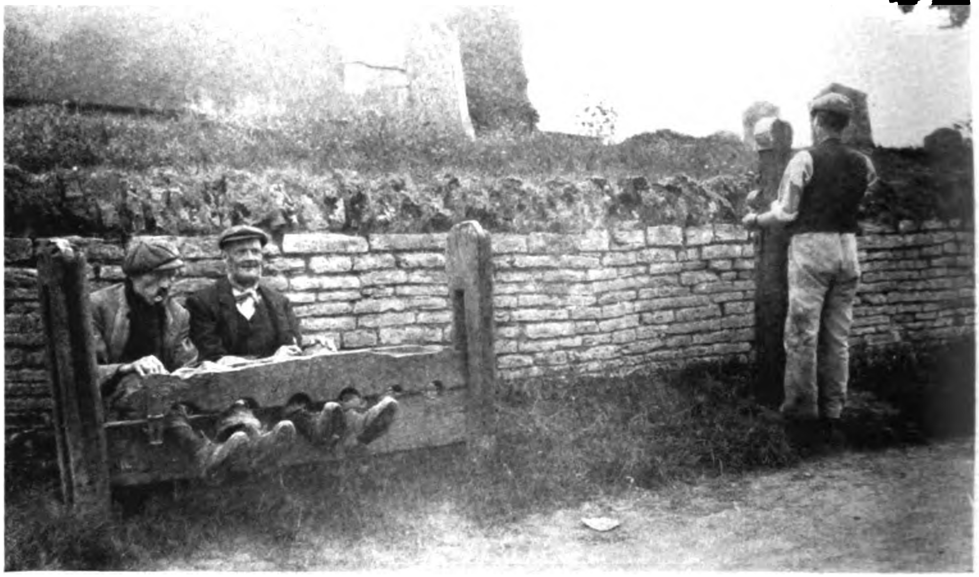
the total tonnage—this being due to the very heavy coal business from that port. Cowes has 24,000 ships a year; Newcastle, 13,000; Portsmouth, 15,000, and Glasgow and Belfast 11,000 each.

With the opening of the Clyde, Glasgow has been brought into direct communication with oversea lands. Dover, with its great Admiralty harbor; Chatham, with its vast Royal Dockyard, where 7,000 workmen are employed even in normal times; Middlesborough, with its great shipbuilding industry; Manchester, with its splendid canal opening up an inland city to world trade; Belfast, with its famous shipbuilders; Portsmouth and Plymouth, on the south coast, with their extensive port works; Grimsby, Hull, and Aberdeen, with the largest fishing fleets in existence; Newlyn and Brixham, homes of the mackerel fisheries, and Milford and Fleetwood, the ports the hake has made famous, are all places full of enterprise, which have been even more active since the war began than they ever were before a "submarine peril" was dreamed of.

As has been said, the British Isles contain no less than 119 ports available for commerce, and practically all of them have been developed for effective use.

Even if the Germans have 500 submarines constructed for the purposes of this blockade, as is claimed, the total makes an average of only about four submarines available for blockading each port.

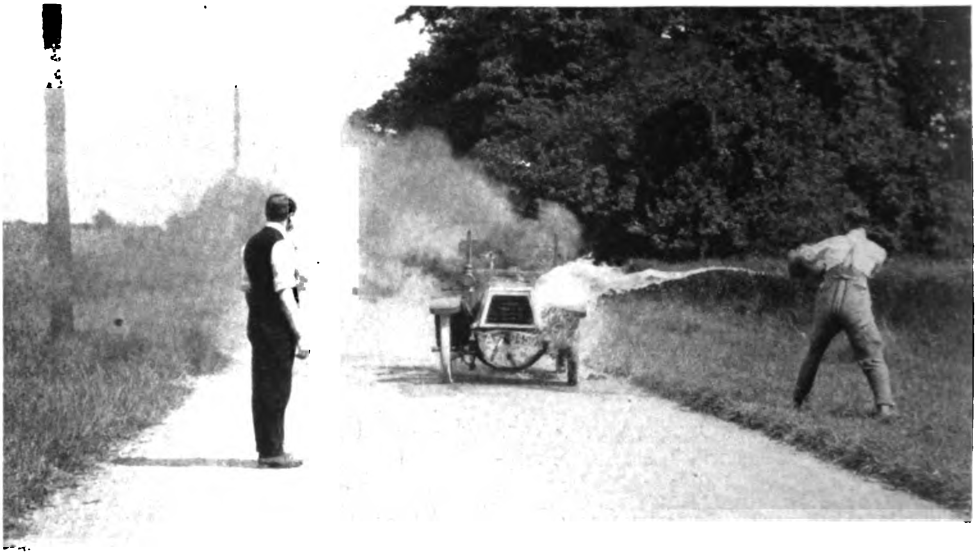
Submarines, with even the largest radius which any of these boats possess, are dependent upon a convenient base or upon the service rendered by a "mother ship." They generally can carry a most limited number of torpedoes, without which they are ineffective, and in addition they are severely handicapped by the very nature of their operations.



Photograph by A. W. Cutler

A REMINDER OF "YE GOODE OLD DAYS": STOCKS AND WHIPPING-POST

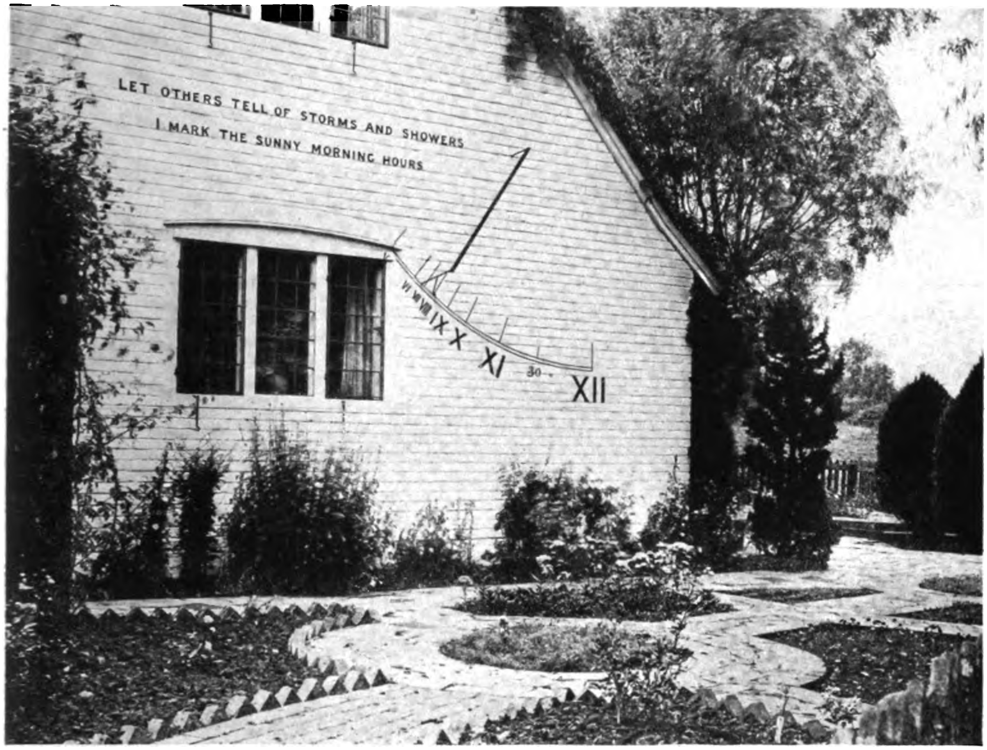
Situated, as was the custom, opposite the church at Rock, Worcestershire. The supremely contented expression on the face of the gentleman on the right may be accounted for by the fact that he knew he would receive one shilling upon being released from the stocks.



Photograph by A. W. Cutler

THIS IS A CURIOUS ACCIDENT THAT OCCURRED RECENTLY ON THE LONDON ROAD

These two young men were bringing this car into Worcester for repairs, when suddenly, without warning, the machine burst into flames. There were three two-gallon tins of gasoline in the automobile, and it did not take those two young men long to get out of the car. Buckets of water thrown on the burning mass proved unavailing. Traffic on either side was tied up for over an hour, expecting every moment that the petrol would explode. Strange to say, it didn't! The car, a Panhard, was totally destroyed--a loss of $1,500.


LET OTHERS TELL OF STORMS AND SHOWERS
I MARK THE SUNNY MORNING HOURS
IX
X
XI
30
XII

Photograph by A. W. Cutler

THE PICTURESQUE SUN-DIAL HOUSE: HOLMWOOD, SURREY

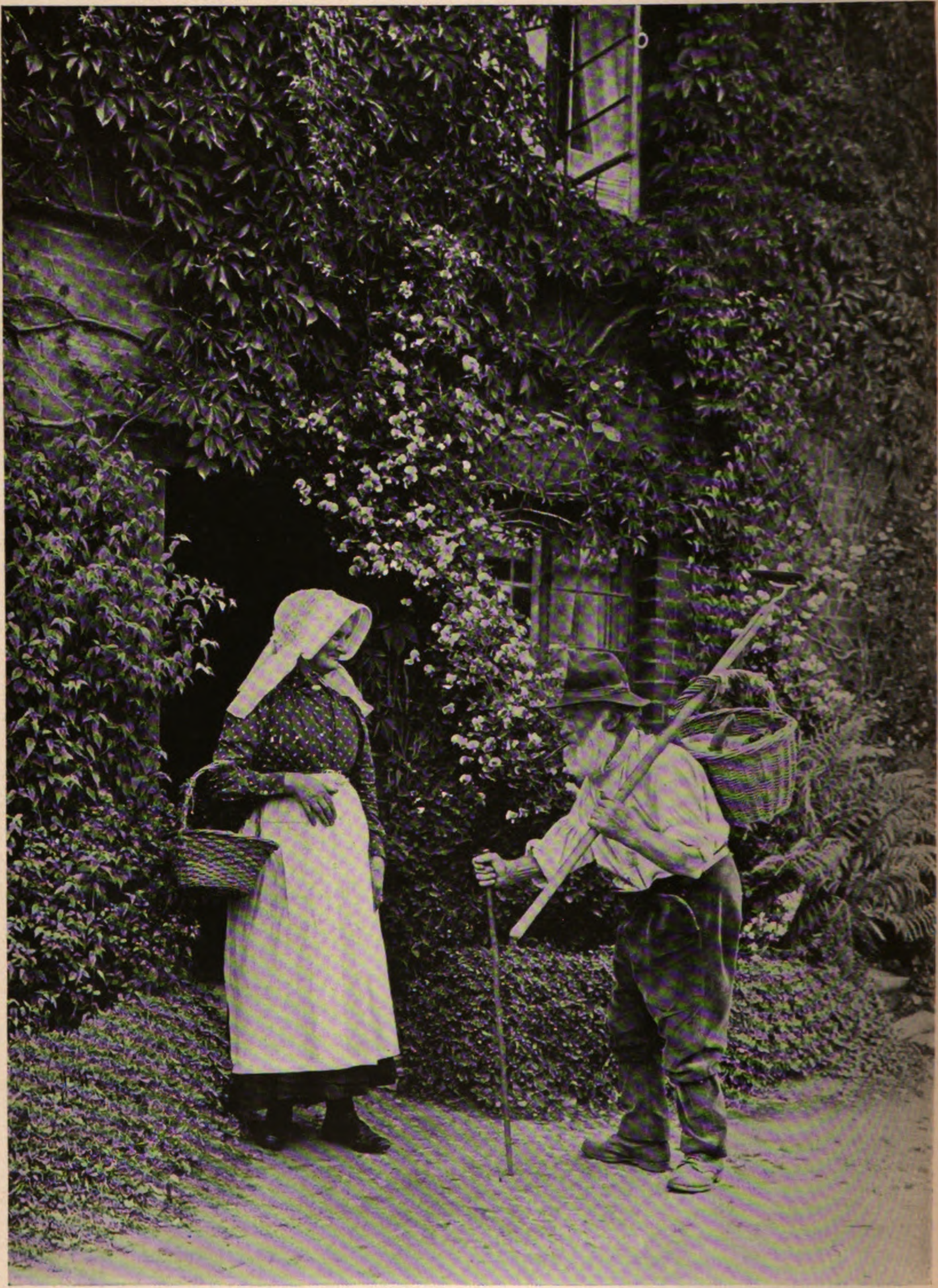
The ordinary blockade is not subject to these limitations. A blockade established upon the surface of the ocean can maintain a constant lookout over a wide expanse of the sea. By use of searchlights, it can be carried on at night as well as by day. Cruisers may be coaled at sea and provided with ammunition openly. The submarine may not. Without a base or a hovering fleet of "mother ships," the submarine cannot do continuous duty on blockade or otherwise.

If it is planned to operate the submarine blockade of the British Isles in relays, the number of ships on duty at a given port will be thereby halved, to the detriment of the blockade's effectiveness. Two submarines to a port could hardly maintain a blockade in the condition which the ordinary interpretation of international law has required to give it recognition among neutrals.

British domination of the sea has not come about by chance. England's geographic limitations have compelled her to keep the avenues of ocean traffic open through constant readiness to render naval protection to her carrying trade; and it is the result of her insular position that her activities have developed on sea and land.

What Nature has always done for the children of the wild by rendering them adaptable, through habit and through equipment, to the environment in which they are placed, the English people have done for themselves. Cribbed, cabined, and confined upon a group of islands limited in area and capable of inadequate productiveness, even with the most intensive of cultivation, they were forced, first, to command the avenues of supply for themselves and, in order to meet the increasing expense of such necessity, second, to develop their manufacturing resources to the highest degree.

To this they owe the great number of ports which they now possess and which, by their very numbers, render a blockade, however attempted, a herculean task. A clearer example of how nations are limited or advanced by their geographic environment could hardly be found.



Photograph by A. W. Cutler

"WELCOME HOME, GRAND-DAD": A GLIMPSE OF RURAL LIFE AT ELMLEY CASTLE, WORCESTERSHIRE

With sons at the front the path to the village post-office is a beaten track for this aged couple and thousands like them. And, alas, only too often does the weary trip bring the news from "Somewhere in France" that death has been the soldier's crown!

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THE
NATIONAL
GEOGRAPHIC
MAGAZINE

OUR FOREIGN-BORN CITIZENS

ALTHOUGH the immigrants who have flocked to our shores since 1776 have mingled their blood with pre-Revolution strains until the American of unadulterated colonial ancestry is the exception and not the rule; although a great political party was formed and the presidential campaign of 1856 was fought with the immigration question as practically the paramount issue; although the coming of the Irish and of the eastern European each in turn stirred the nation, there never has been a time when the subject of our foreign-born population occupied such a deep place in the minds of the people as it does today.

Should we have departed from our time-honored custom of making America a homeland for whoever loves freedom for himself and craves liberty for his children, whether he be literate or illiterate? Would our polyglot population be a menace in war time, or would it, as we have proudly thought in the past, be fused into one liberty-loving, flag-defending race? And when the war is over and the world escapes from the horrible nightmare of blood and carnage and hate, will the consequent burdens drive hordes of people to America, as did the potato famine in Ireland, the social and political unrest in Germany in the decade preceding our Civil War, and other economic hardships in continental countries?

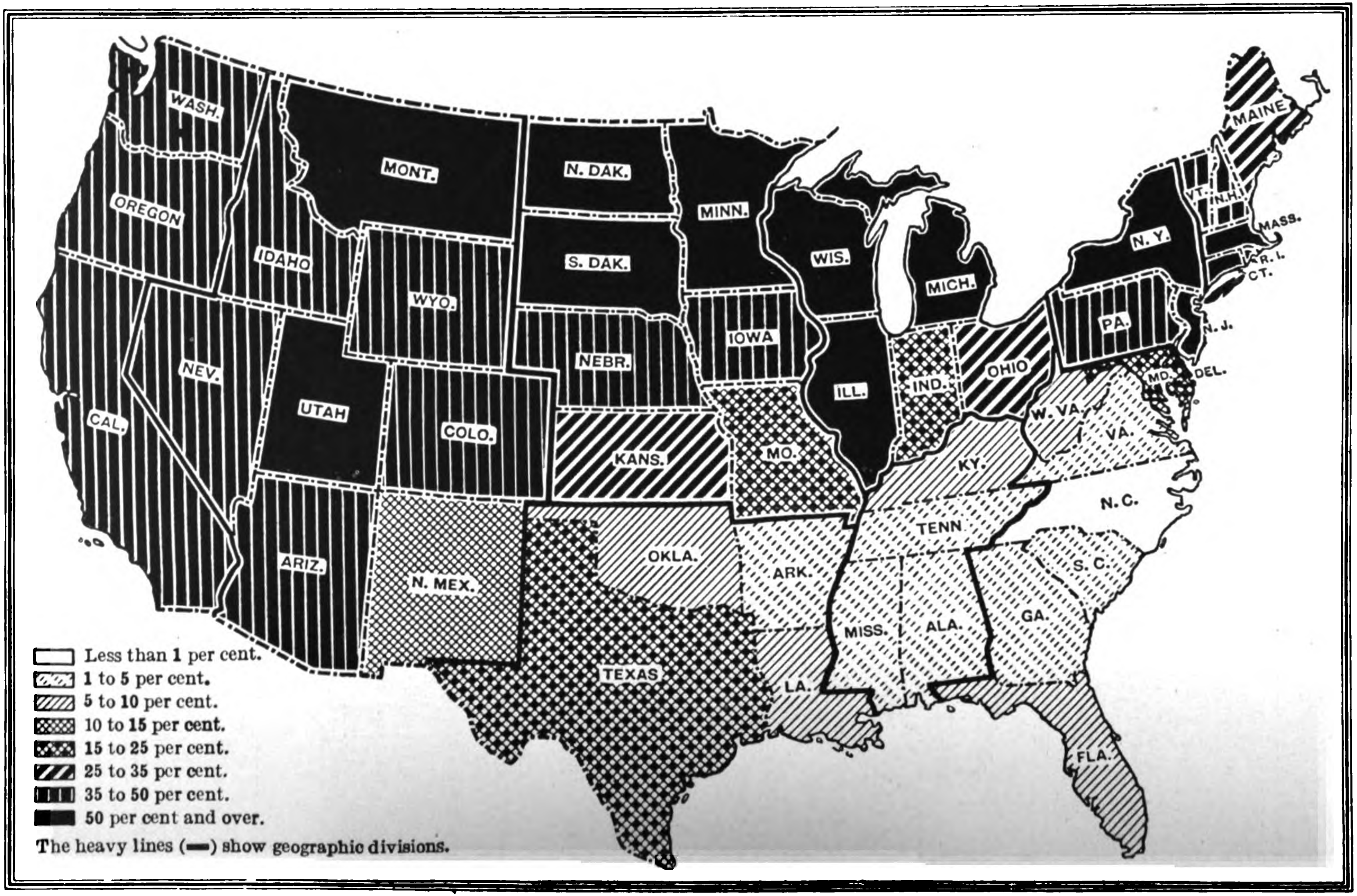
THE MOST FREQUENTLY VETOED MEASURE IN AMERICAN HISTORY

Never in the history of the American people has a measure been passed by Congress as often and vetoed by the President as many times as the immigration bill recently enacted into law. Three Presidents of the United States have felt so keenly that the founders of the government and their successors were right in holding that the lack of opportunity to learn to read and write should not bar an alien from freedom's shores, that they have overridden the will of four Congresses and have interposed their veto between the congressional purpose and the unlettered immigrant's desire.

But Congress was strong enough at last to override the presidential veto, and so the immigration doctrines of a century and a quarter are changed and the practices of generations are to be made over. Hereafter no one above the age of 16 who cannot read and write may enter.

The effect of the literacy test applied to the immigration of the future may be shown by a few figures. More than one-fourth of all the immigrants admitted to the United States in the past two decades who were over 14 could neither read nor write. Out of 8,398,000 admitted in the ten years ending with 1910, 2,238,000 were illiterate. And yet so rapidly does illiteracy melt away that, adding to this number all the illiterates here before these came, there were only 1,600,000 illiterate foreigners in the United States when the census of 1910 was taken.

Under a literacy test we will turn back one-fourth of the Armenians, two-fifths of the Serbians, Bulgarians, and Monte-


WASH.
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DEL.
PA.
N. J.
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VT.
N.H.
MAINE
MASS.
R. I.
CT.
□ Less than 1 per cent.
▨ 1 to 5 per cent.
▨ 5 to 10 per cent.
▩ 10 to 15 per cent.
▩ 15 to 25 per cent.
▨ 25 to 35 per cent.
▥ 35 to 50 per cent.
■ 50 per cent and over.
The heavy lines (▬) show geographic divisions.

MAP SHOWING THE FOREIGN STOCK IN THE POPULATION OF THE UNITED STATES. BY FOREIGN STOCK IS MEANT FOREIGN BORN AND CHILDREN OF A FOREIGN-BORN FATHER OR MOTHER

The States in black have more people who are either immigrants or the sons and daughters of immigrant parents than they have of native stock. The immigrants of the United States and their children [illegible]

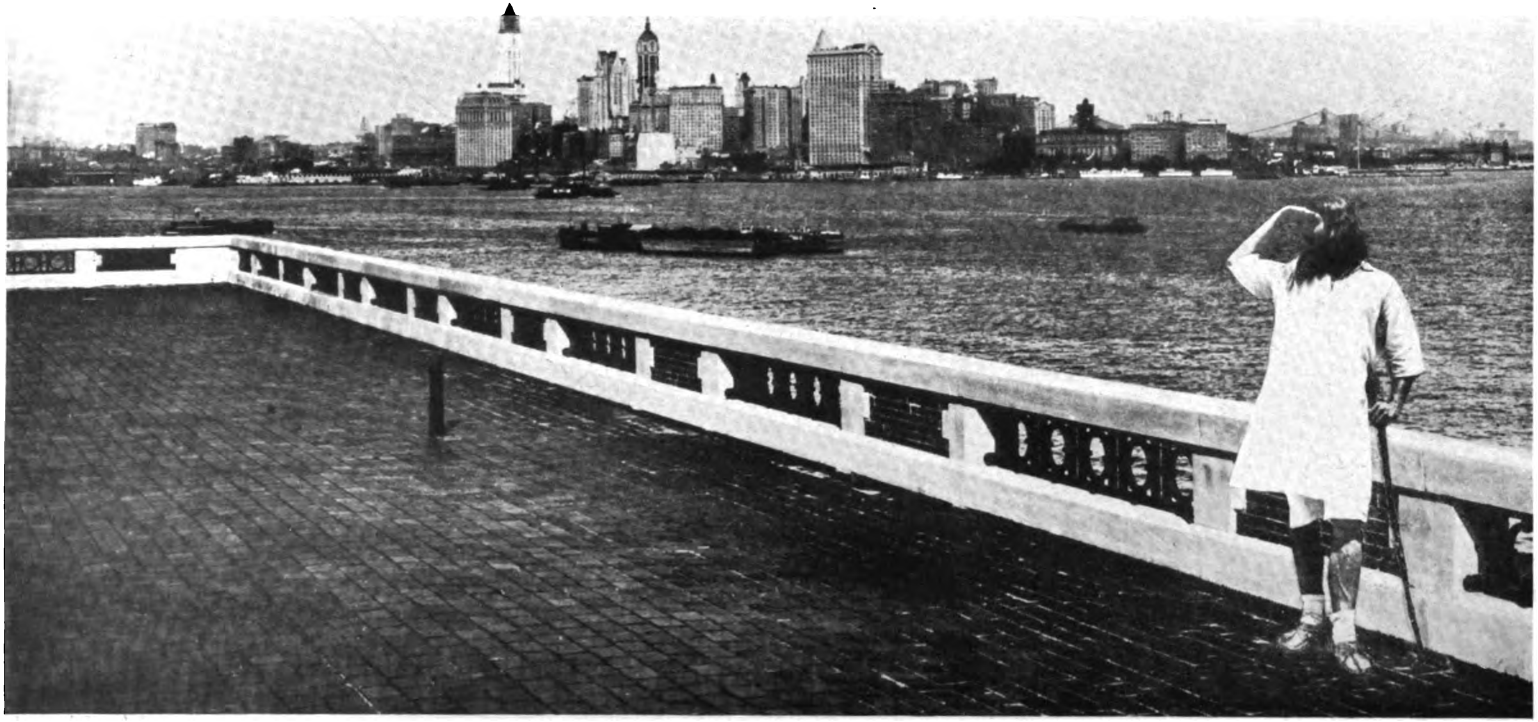
Photograph from Frederic C. Howe

SCOTCH CHILDREN

Taunted with the fact that in England oats were fed to horses and in Scotland to men, a famous Scot replied that England was famous for its horses and Scotland for its men. America knows how much it is indebted to Scotland and the Scotch-Irish. Nearly half of our Presidents have been either Scotch or Scotch-Irish.

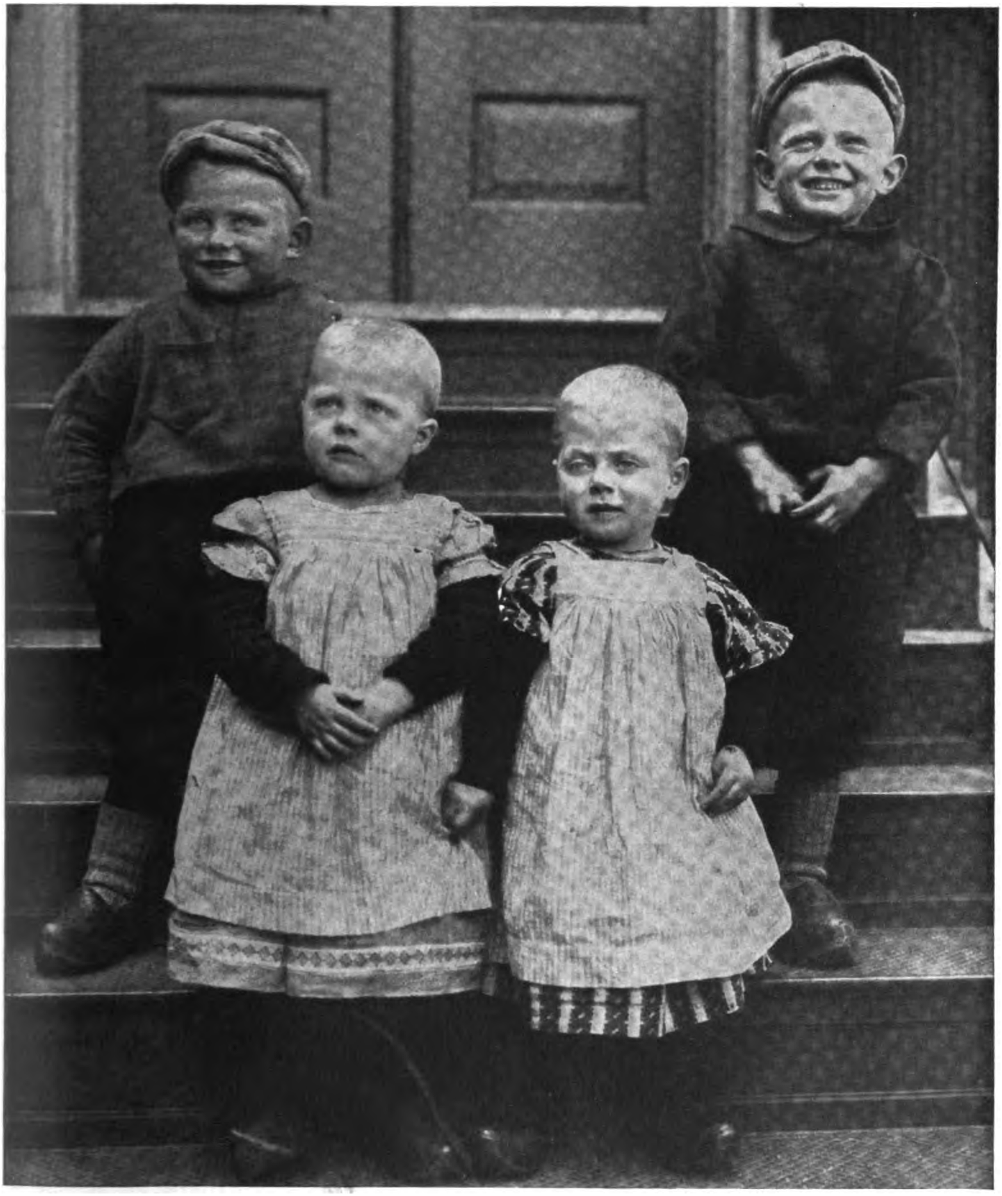
negrins, more than a fourth of the Jews and Greeks, more than half of the South Italians, more than a third of the Poles and Russians, and a fourth of the Slovaks.

Who can estimate our debt to immigration? Thirty-three million people have made the long voyage from alien shores to our own since it was proclaimed that all men are born free and equal, and liberty's eternal fire was kindled first on American soil! It is as if half the German Empire should embark for America, or all of England except the county of



A RUSSIAN HEBREW VEGETARIAN IMMIGRANT AT ELLIS ISLAND: NEW YORK CITY IN THE BACKGROUND

In normal times Ellis Island might be called the World Congress of Costumes. Everything but the habiliments of Eden seems to pass muster there.



Photograph from Frederic C. Howe

FOUR LITTLE DUTCH KIDDIES JUST ARRIVED

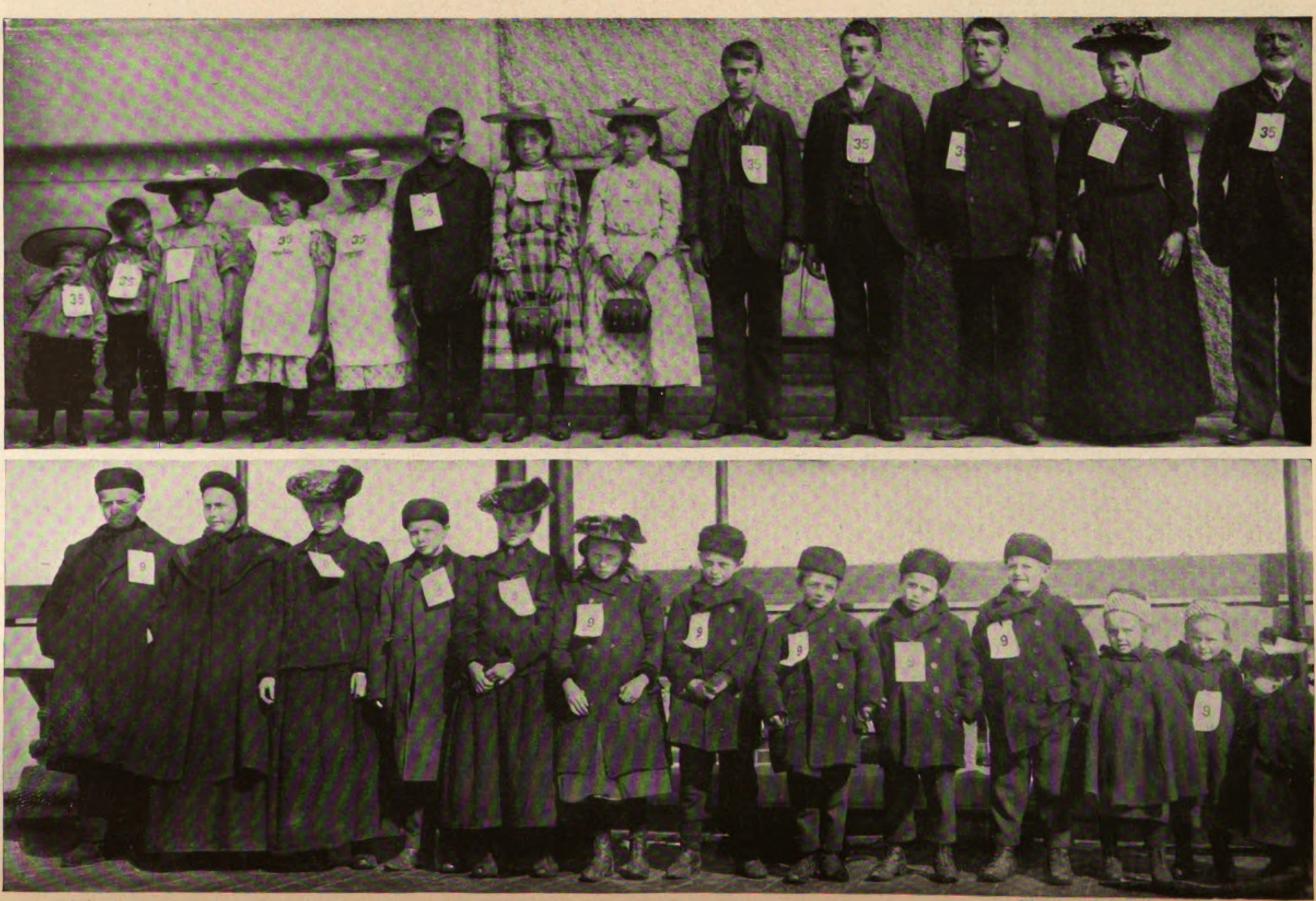
Generations of careful living such as is always necessary in a country of narrow boundaries and expanding population has developed in the Dutch a frugality and a contentment with simple pleasures that cannot be excelled.

Kent. It is as if all of the population of all of the States of the United States west of the Mississippi, plus that of Alabama, should have come bodily to America.

History records no similar movement of population which in rapidity or volume can equal this. Compared to it, the hordes that invaded Europe from Asia, great and enormous as they were, were insignificant.

Of the 33,000,000 who have come more than 14,000,000 still live among us, and their children and children's children are now in good truth bone of our bone and blood of our blood.

Not long ago America crossed the hun-



Photograph from Frederic C. Howe

TWO DUTCH FAMILIES—IMMIGRANTS THROUGH ELLIS ISLAND: IN EACH CASE THE PARENTS AND CHILDREN NUMBER 13 dred-million line in the number of its citizens, and it is interesting to note the composition of that population.

To begin with, there are 11,000,000 colored people, including negroes, Indians, Chinese, etc. Then there are 14,500,000 people of foreign birth among us. In addition to these, there are 14,000,000 children of foreign-born fathers and mothers and 6,500,000 children of foreign-born fathers and native mothers, or *vice versa*. When all of these have been deducted from the 100,000,000, only 54,000,000 remain of full white native ancestry.

NOTABLE PEOPLE OF FOREIGN STOCK

Yet the 35,000,000 American people who are of foreign stock—that is, foreign born or the children of a foreign-born parent—include some of the most illustrious citizens of our Republic. Even the President of the United States himself has only one ancestor who was born in America, and the list is long and notable of statesmen, captains of industry, leaders of finance, inventors, makers of literature and progress, who have strains of blood not more than one generation on this side of the sea.

An examination of the statistics of American immigration shows that since the foundation of our government the United Kingdom of Great Britain and Ireland have contributed 8,400,000 of her people and Germany more than six million. Ireland, with more than four million; Great Britain, with a little less than four million, and Scandinavia, with something less than two million, have, together with Germany, contributed more than half of the total immigration to our shores since the beginning of the Revolutionary War.

When we take the German immigration of the United States between 1776 and 1890 and compare it with that from other countries, a somewhat startling result, and one usually unsuspected, is disclosed. The total arrivals of aliens in those 114 years aggregated 15,689,000, of whom more than 6,000,000 were British and Irish and 5,125,000 were Germans, which shows that one alien out of every three arriving in America during more than a century of our existence was a German. Only the United Kingdom shows a greater proportion.

Photograph from Frederic C. Howe

TYPICAL HEAD-DRESS OF ITALIAN WOMEN

Since 1890 the trend has been very different. With more than 17,000,000 immigrant arrivals since that date, only 1,023,000 have been Germans. If from this number a proper deduction is made for those who returned to their homeland and those who have died since their arrival, it will be seen that there are fewer than a million former subjects of the Kaiser in this country who have not been here more than twenty-six years. Of more than 8,000,000 people of German birth and immediate ancestry among us, less than 1,000,000 fail to have the background of birth or long residence in America behind them.

IRELAND'S GIFT TO AMERICA

It is interesting to note the other foreign elements that have entered into the make-up of American population since 1776. What a wealth of blood that wonderful little island, Ireland, has given us! More Irish people have crossed the seas to become part of us than have remained

A RUSSIAN VEGETARIAN

A BAVARIAN PEASANT

Photographs from Frederic C. Howe

behind. It is remarkable that so small an island—smaller, indeed, than the State of Maine—could in a century and a half send us enough people to duplicate the present population of eleven of our States having an aggregate area as large as the United Kingdom, France, Germany, and Austria-Hungary together.

Austria-Hungary stands next on the list of contributors to the immigrant stream that has flowed from Europe to America. Although Austro-Hungarians began to immigrate in considerable numbers only when the arrivals from western Europe had begun to fall off, sufficient have come from the dual monarchy to populate the State of Texas to its present density. Italy has sent us enough of her people to duplicate the population of Montana, Wyoming, Idaho, Oregon, Nevada, Utah, Colorado, Arizona, and New Mexico, while England's and Scotland's contribution, 3,889,000 in all, together with Ireland's 4,500,000, gives a total of 8,389,000, or plenty to populate all of the States lying west of Texas and the Dakotas. The Russians who have come to our shores number 3,419,000. They could

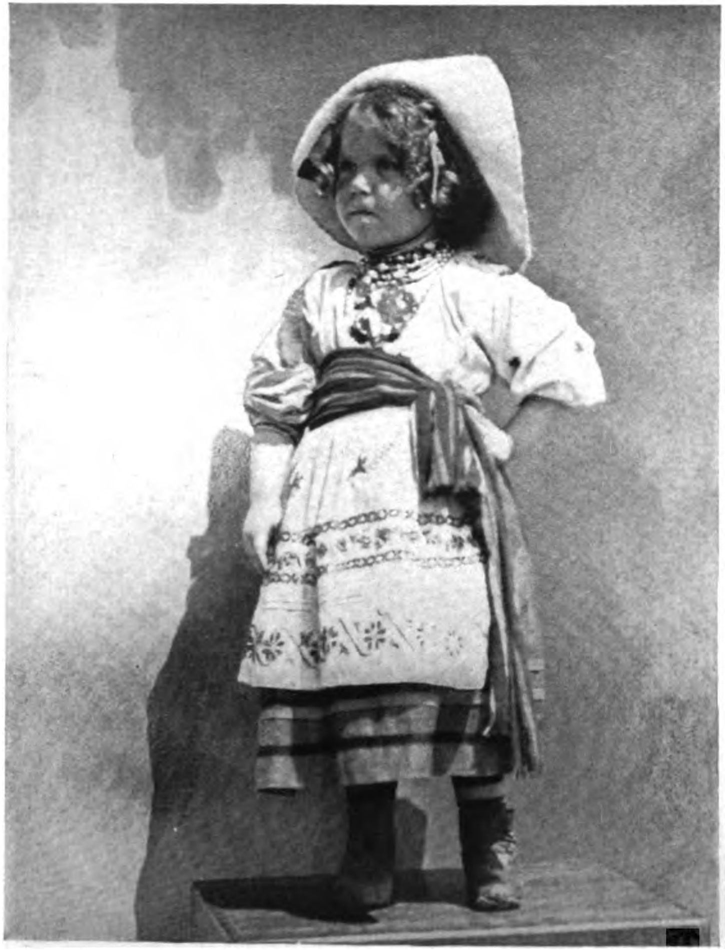
Photograph from Frederic C. Howe

CHILDREN FROM THE BALKAN STATES

"Such pretty dollies as they do have in America! 'Course I'll have my picture taken if you let me hold that sweet little dollie!"

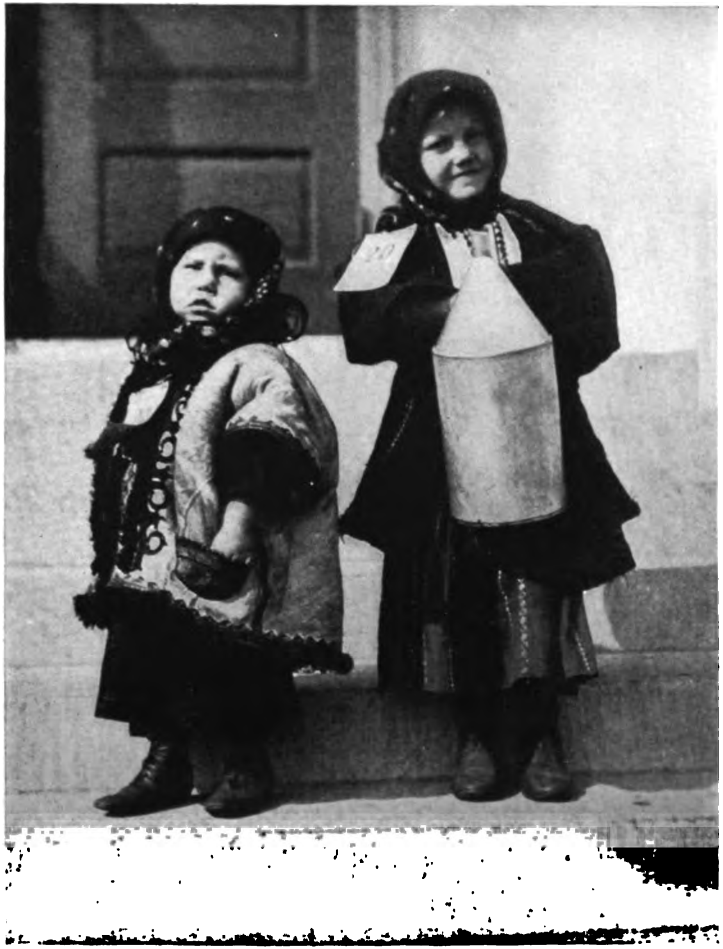
replace one-half of the population of New England.

Although the people of foreign birth constitute only one-seventh of the country's population, they contribute nearly one-fourth (22 per cent) of the arm-bearing strength of the nation. At the last census many of the States had a greater number of foreign-born men of arm-bearing age than they had of native-ancestry citizens, among them Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Wisconsin, Minnesota, and North Dakota. Taking the States where those of foreign birth and their sons together constitute a major portion of the men between the ages of 18 and 44, it will be found that the list includes the above States and the following: New Hampshire, Pennsylvania, Michigan, South Dakota, Nebraska, Montana, Idaho, Arizona, Utah, Nevada,



A NATTY LITTLE LADY FROM NORWAY

Photographs by A. F. Sherman



WALLACHIAN CHILDREN FROM AUSTRIA

Washington, and California—in all 20 States. We have considerably over 20,000,000 men of military age in the United States.

THE IMMIGRANT'S PREFERENCE FOR CITY LIFE

Another striking fact of our immigration situation is the unusual preference of the foreign born and their children for the cities. Of the 35,000,000 foreign-stock whites living in the United States, approximately 23,000,000 live in the cities. In only 14 of the 50 leading cities of the country do the whites of full native parentage constitute as much as half of the total population. Only one-fifth of the population of New York and Chicago is of native white ancestry. Less than a third of the populations of Boston, Cleveland, Pittsburgh, Detroit, Buffalo, San Francisco, Milwaukee, Newark, Minneapolis, Jersey City, Providence, St. Paul, Worcester, Scranton, Paterson, Fall River, Lowell, Cambridge, and Bridgeport are of native ancestry.

Conditions have played some curious pranks in the distribution of the immigrant population in the United States. More than two-thirds of the Germans live between the Hudson and the Mississippi and north of the Ohio. The same is true of the Austrians, the Belgians, the Hungarians, the Italians, the Dutch, the Russians, and the Welsh.

New York, Pennsylvania, and New Jersey have 47 per cent of the Austrians, 34 per cent of the English, 30 per cent of the Germans, 54 per cent of the Hungarians, 45 per cent of the Irish, 58 per cent of the Italians, 56 per cent of the Russians, 34 per cent of the Dutch, and 46 per cent of the Welsh in the United States.

NINETEEN-TWENTIETHS OF OUR FOREIGN BORN CAME FROM COUNTRIES AT WAR

An examination of the data at hand shows that nearly nineteen-twentieths of our foreign-born population come from the countries in Europe now at war. With such a surprising number of people among us who first beheld the light of day under flags now flying over Europe's battlefields, does it not speak well for our country's adopted children that there have been no more evidences of hyphenism than the past thirty months have disclosed?

Photograph from Frederic C. Howe

IN MATTERS OF COSTUME AMERICANIZATION OFTEN PROCEEDS ALL BUT TOO RAPIDLY

The war in Europe has largely closed the gates of that continent to the emigrant. But three short years ago Ellis Island, the greatest immigrant gateway in the world, was one of the busiest places on the face of the earth. The wheels of the great machine that carried the incoming alien through the doors of America turned fast and long. Morning, noon, and night, the men who manned

Photographs from Frederic C. Howe

A TURKISH BANK GUARD

EVEN ALGERIA SENDS ITS QUOTA TO AMERICA

this wonderful mechanism labored as seldom men have to work in order to keep the machine moving fast enough to take care of the vast flood of humanity presenting itself there for inspection and adoption.

Now all is different. Military necessity must be served, and hundreds of thousands, perhaps millions, of those who would have come to man our ever-expanding industries are now on the battlefields of Europe, some still surviving the awful avalanche of fire and steel, and others, alas, asleep in those last trenches where the unending truce of death has stilled the enmities of life! And so Ellis Island is a somewhat lonesome place today. The twelve hundred thousand who came in 1914 are followed by the three hundred thousand of 1916.

THE WAR'S RELATION TO IMMIGRATION

But what of the morrow of American immigration? Will the war, whose military necessities all but stopped the immigrant tide from Europe, be followed by a

Photograph by A. F. Sherman

IMMIGRANTS IN RAILWAY WAITING-ROOM: ELLIS ISLAND

Having passed muster with the doctor and the inspector at the nation's gate, it has swung open to these new arrivals, and now they are in free America, ready to journey unhindered to their respective destinations.

peace whose economic opportunities will have the same effect?

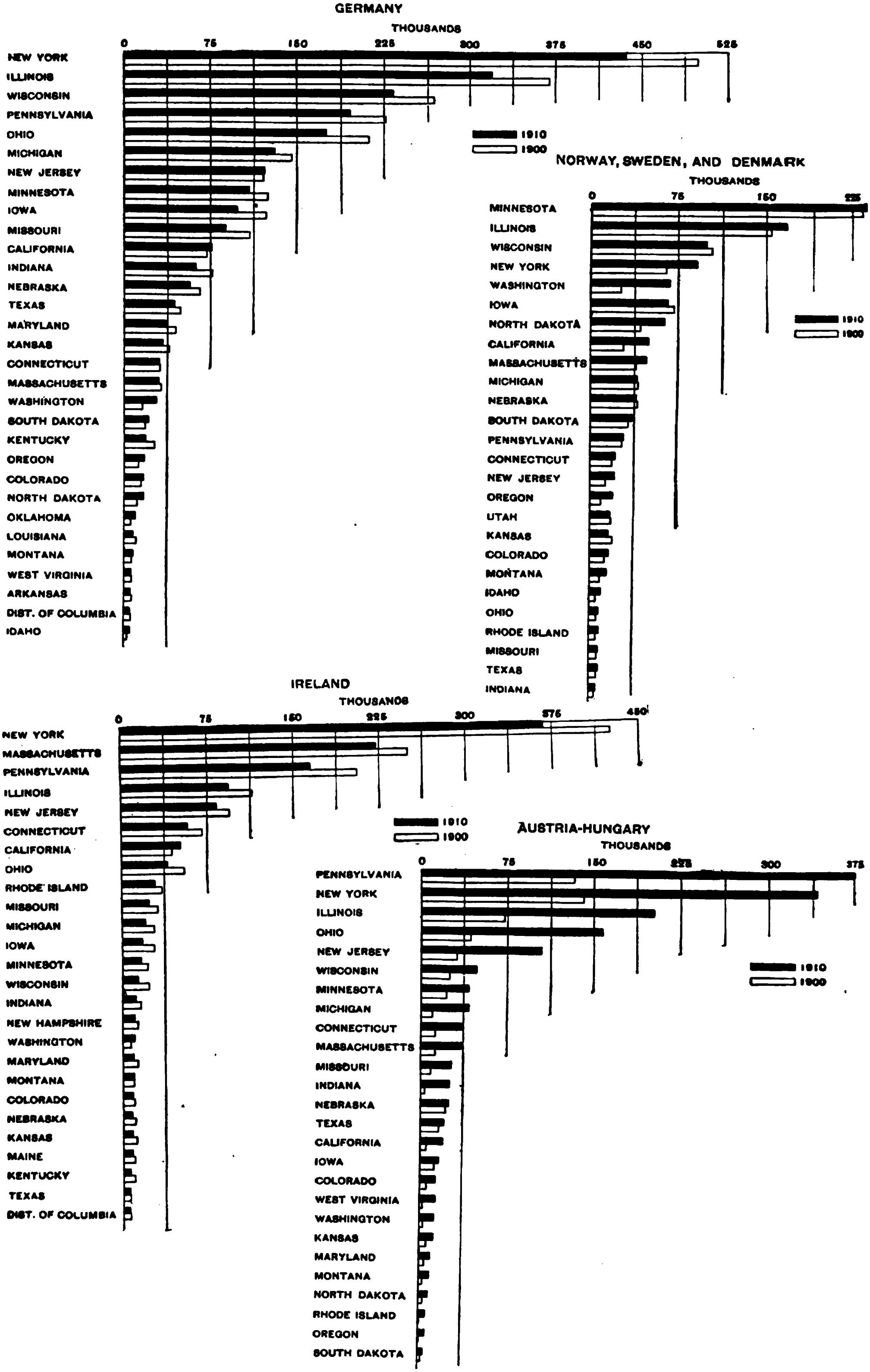
One searches the pages of history in vain for a satisfactory answer. The history of past wars throws no certain light upon it. After our own Civil War, the South, burdened with debts, wanted a million things. But empty pocketbooks and poor credit form a combination that has little buying power. And so the South, unable to solve its economic difficulties at once, had to sit by and see thousands of its people go into the North and West to start over again. The end of the Russo-Japanese War brought great hordes of Russians to our shores, economic necessity impelling them to leave their homelands.

The Franco-Prussian War, on the other hand, sent only a normal number of French people to America as one of its aftermaths, and all the people who left Europe following the Napoleonic wars were fewer in number than those coming here in a single three-months' period of our normal immigration history.

There are those who say that the reason the South could not rebuild after the Civil War was because it did not get the support of the Federal Government—a support which the governments of Europe will give their people. They point out that none of the warring nations, however much they may owe, have borrowed as near to the margin of their credit as many Latin-American countries, and that people who would not buy their war bonds will take their peace obligations readily. They point to the experience of Baltimore and San Francisco to show how new prosperity and fresh resources can arise out of the ashes of calamity.

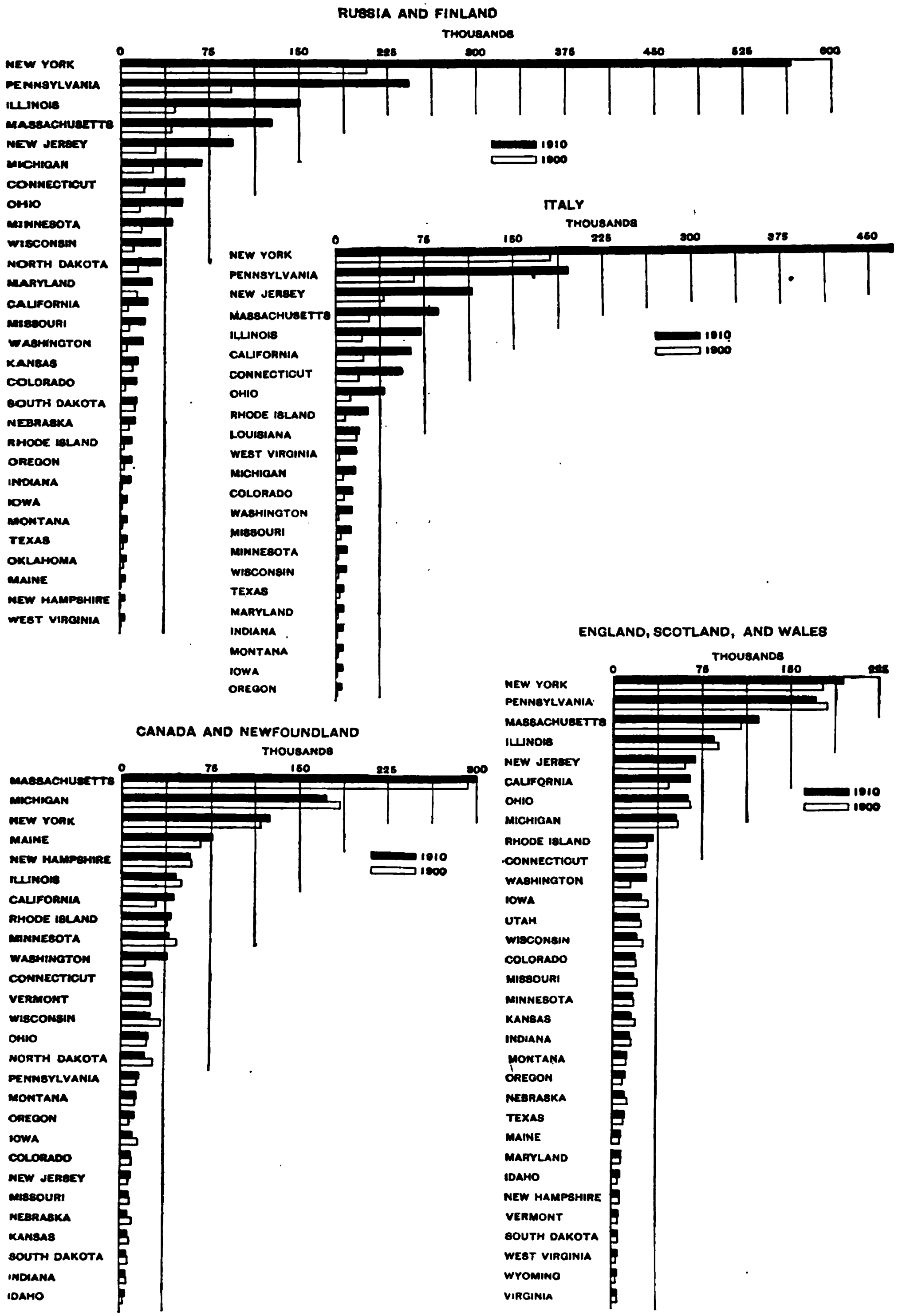
SIX PANAMA CANALS A YEAR INTEREST CHARGE

But the difference between an isolated city and practically a whole continent is too great for such an analogy to be sig-



Courtesy of U. S. Census Bureau

THIS ILLUSTRATION SHOWS WHERE OUR IMMIGRANTS FROM GERMANY, SCANDINAVIA, IRELAND, AND AUSTRIA-HUNGARY HAVE SETTLED



Courtesy of U. S. Census Bureau

THIS ILLUSTRATION SHOWS WHERE OUR IMMIGRANTS FROM RUSSIA, ITALY, CANADA, AND GREAT BRITAIN HAVE SETTLED

Photograph from Frederic C. Howe

A LAPLAND WOMAN

nificant. Furthermore, no State, no nation, no continent has ever before staggered under such an overwhelming debt. If the war were to end now, its financial obligations alone, to say nothing of the devastation, would reach a total of $60,000,000,000. Think of a continent, with much of the flower of its brains and brawn either dead or maimed, and vast areas of its productive territory in ruins, facing a debt whose interest charges alone annually will equal the cost of six Panama canals! And that continent one which, before the war, sent us a million of its people every year because living was hard at home!

Whoever has stood at the gate at Ellis Island and watched the human tide surge through, and whoever has traveled among the peasants of Europe must realize how narrow before the war was the margin between their total income and their necessary outgo. Against these things must be matched the efficiency that the war has forced upon the people and the nations and the spirit of self-sacrifice it has engendered.

America has always been a polyglot nation, although all tongues do finally melt into hers. It is said that twenty years after Hudson discovered Manhattan fourteen languages were spoken in New Amsterdam. The religious wars in the seventeenth and eighteenth centuries sent thousands and tens of thousands of French Huguenots, German Protestants, and English Puritans to our shores. One American-built vessel is said to have made 116 round trips between New York and Liverpool in nineteen years, during which time it brought 30,000 immigrants to America.

A MAN VALUED AT FIFTY DOLLARS

The first colonial charter granted by England for the purposes of new settlement was conditioned on homage and rent. This was the Virginia charter for the land extending from Cape Fear to Halifax, the rent of which was to be one-fifth of the net produce of gold, silver, and copper. The land aristocracy was promoted by the provision that a planter might add fifty additional acres of land for every person he would transport into Virginia at his own cost. When the Pilgrims were outfitting, each immigrant was rated at a capital of ten pounds. No divisions of profits was to be made for seven years.

In the early days the people who came were largely of the sturdy pioneer type. A great many of them could neither read nor write, while most of those who could were able to do so only in a limited way. The transpositions in many names in America came from the carelessness or inability of public officials in spelling men's names straight in deeds, wills, and other documents.

GOVERNOR BERKELEY OPPOSED THE PRINTING PRESS

In 1718 three hundred and nineteen Scotch-Irish empowered their agent to negotiate terms with the Governor of Massachusetts for their settlement in that colony. Ninety-six per cent of the whole number wrote their names out in full. It has been said that at that time in no other part of the British Empire could such a proportion of men miscellaneously selected have written their names. Twenty-six per cent of the German male immigrants above sixteen years of age who came to America in the first half of the eighteenth century made their marks.

Different communities took different views as to education in those early times. In Connecticut every town that did not keep school for at least three months in the year was liable to be fined. In Virginia, Governor Berkeley thanked God that there were no free schools, nor printing presses, and expressed the hope that they would not arrive during his century, since he believed that learning brought disobedience, heresy, and sects into the world, and printing developed them. At one time in Virginia, out of 12,455 male adults who signed deeds and depositions, 40 per cent made their marks.

Immigration to the United States was not large in the early history of the country. Europe did not look upon the young republic with any favor, and the people of that continent did not regard America as offering attraction for the ambitious home-seeker. Between 1776 and 1820, a period of 44 years, less than 250,000 immigrants are believed to have arrived in the United States — an average of fewer than 6,000 a year.

The students of immigration differentiate between the immigrants from northwestern Europe and those from southern and eastern Europe by calling them "old" and "new" respectively. The "old" immigrant arrived with his family and came with a desire to make America their home. Only sixteen out of every hundred of the "old" immigrants returned to Europe, and more than two-fifths of those who came were females. On the other hand, thirty-eight out of every hundred of the "new" immigrants return to their native lands, while only one-fourth of those who come are females. It will be seen from this that proportionately more than twice as many of the "new" immigrants return to Europe as of the "old," while the number of women among the "new" is vastly smaller.

LABOR'S DEBT TO IMMIGRATION

Northwestern Europe has given us 17,000,000 immigrants, where southern and eastern Europe have sent us 15,000,000.

The labor supply which immigrants have brought to the nation constitutes an incalculable debt. Seven out of every ten of those who work in our iron and steel industries are drawn from this class; seven out of ten of our bituminous coal miners belong to it. Three out of four of those who work in packing towns were born abroad, or are children of those who were born abroad; four out of five of those who make our silk goods, seven out of eight of those employed in our woolen mills, nine out of ten of those who refine our petroleum, and nineteen out of twenty of those who manufacture our sugar are immigrants or children of immigrants.

The story of Calumet, in the northern part of Michigan, shows how much of a monopoly the immigrant has in the mining industry in America. It is a city of 45,000, who live and work in the copper mines under Lake Superior. Twenty different races share in its population, and not even Babel heard more tongues. Sixteen nationalities are represented on its school-teaching force. In New York the foreigners colonize, as on the East Side; in Calumet it is the native population that colonizes, the American colony there being known as Houghton.

Americans sometimes are inclined to complain about the lowering of wage standards through the advent of the "new" immigrant. Where once the native citizen and the home-builder from northwestern Europe had to engage in ditch digging and in dirty and dangerous occupations, the coming of the "new" stream of humanity has released them from such task and has permitted them to take higher positions in the industrial world. The Irish, German, Welsh, and Scandinavian within our gates, along with the native American working-man, are now able to give their time almost wholly to work in the field of skilled labor, and as overseer for the "new" immigrant in the industrial centers. The latter has been the ladder on which his predecessor has climbed.

MOVING INTO BETTER QUARTERS

Go to New York or any other principal city, and you will find that the quarters that were once occupied by the Germans, the Irish, the English, and the Scandina-

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THE MELTING-POT IN OPERATION

Of the 14,500,000 people of foreign birth in the United States today, some 3,000,000 do not speak our language. The United States Bureau of Education of the Department of the Interior, which has accomplished wonders in coördinating the educational activities of the nation, has undertaken to establish night schools in every industrial center as one of the processes of Americanizing these people. Other nations frequently compel their nationals to learn the official language and place bans on alien tongues. But America is going about the task in kindlier spirit and its efforts are being appreciated. The picture shows the school of a big industrial concern in session; the teachers at the blackboards are foreigners who can talk in both their native and their adopted tongues.

Photograph from Frederic C. Howe

MONTENEGRINS IN THEIR NATIVE COSTUMES

Mountaineers by birth and environment, the people of Montenegro are a tall, upstanding. sinewy race. Physical perfection must be inherited, but education may be acquired, and the Montenegrin bequeaths the one and a desire for the other to his American-born posterity.

vians are now occupied by the Italians, the Slavs, and the immigrant Jew. Their coming has permitted the foreign born who came in earlier decades to command better positions and to live under better conditions than they otherwise could have done.

From whatever country the immigrant comes, he is, as a rule, above the average of the working classes in his community; for money is scarce in southern and eastern Europe, and the peasant who can accumulate enough to bring him to the United States must have some purpose in life, a fair share of ambition, and no little ability to practice self-denial. The great majority have come from the small villages in the rural districts.

That the alien's children are less illiterate than he is; that they commit less crime than he does, and have less tendency to insanity than he is shown by the statistics gathered by the United States Bureau of the Census and by the Immigration Commission of 1911.

Furthermore, these statistics prove that his grandchildren are about as free from illiteracy as the American child of na-

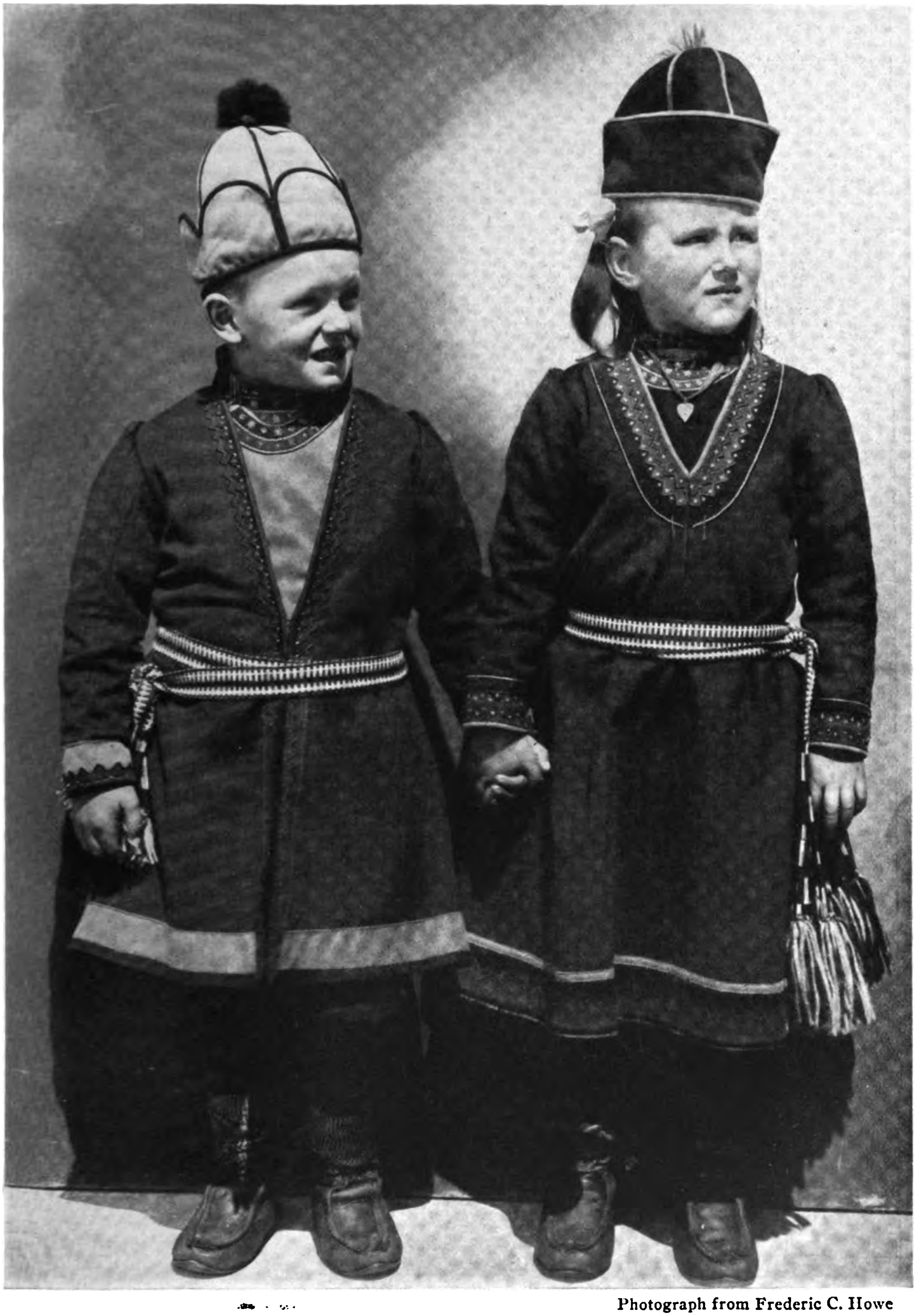
Photograph by Frederic C. Howe

CHILDREN OF ALL NATIONS ON ELLIS ISLAND ROOF GARDEN

Many of the poor little boys and girls who arrive at Ellis Island do not know how American kiddies play, but the roof-garden romps one may see every fair day show that they are apt at learning.

tive lineage, and even less disposed to insanity than the child whose ancestry may be traced to colonial times. In everything that goes to show good citizenship the grandchild of the immigrant stands the statistical test as well as the child of native parentage. How many immigrants we shall receive in the future no one can say. But, assuming that we have no immigration, and that the United States will grow as fast during the three centuries ahead of us as Europe grew from 1812 to 1912, we will have a population of nearly 500,000,000 in 2217, or approximately 166 to the square mile.

Agricultural students have declared that the soil of the United States has a sustaining power of 500 to the square mile. Assuming that one-third of the country is occupied by waste land, we have room on this basis for 900,000,000 people.



Photograph from Frederic C. Howe

NORWEGIAN CHILDREN IN PEASANT COSTUME

Of all the countries of the earth, only Ireland has contributed a greater proportion of her sons and daughters to the development of America than Norway. We now have one-third as many Norwegians and their children as the homeland itself.

Photograph from Frederic C. Howe

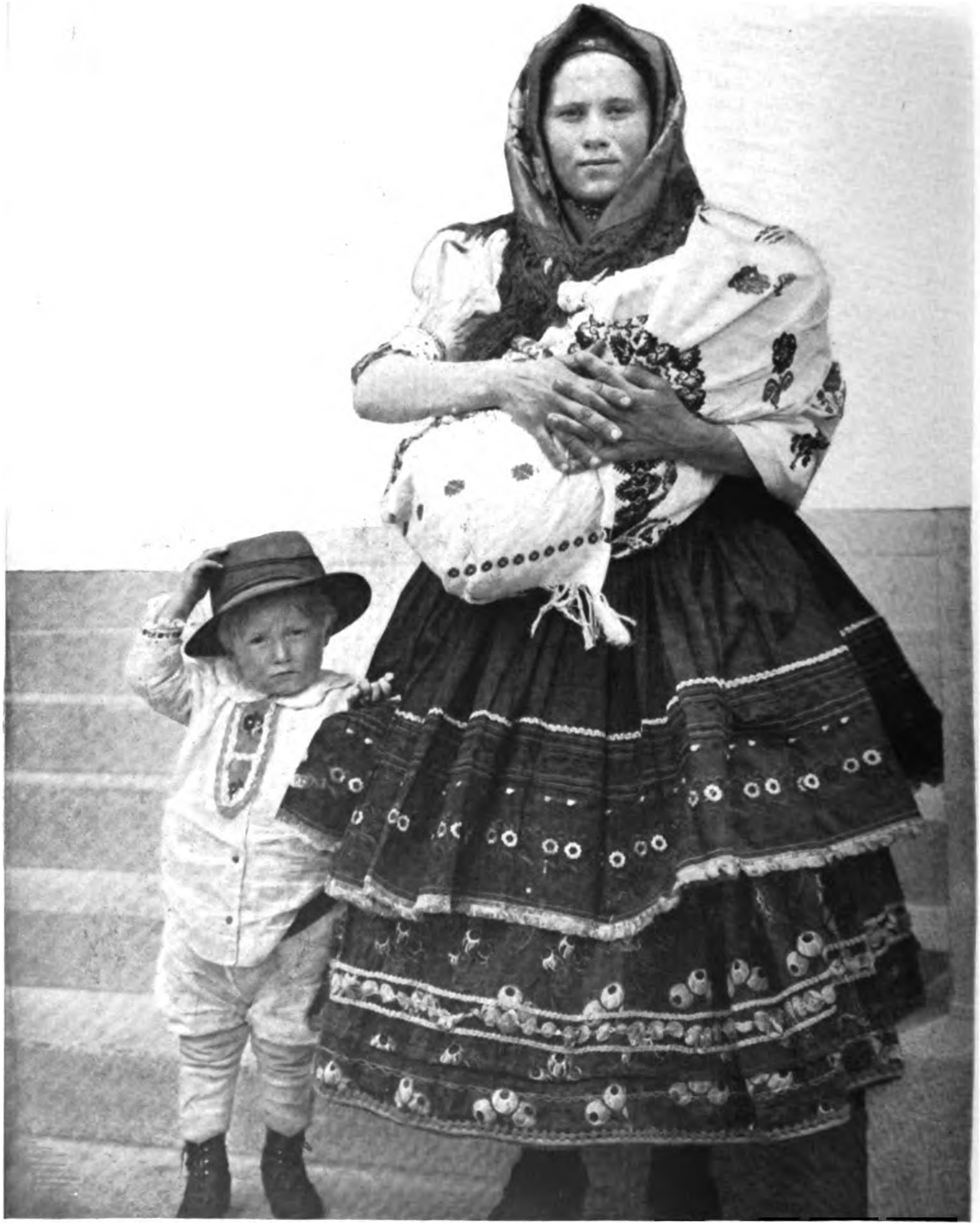
A FINNISH FAMILY

There are about six thousand Finns in the United States. Hardy, self-reliant, industrious, they make good citizens of the type that Scandinavia sends us.

Photograph from Frederic C. Howe

ROUMANIAN SHEPHERDS

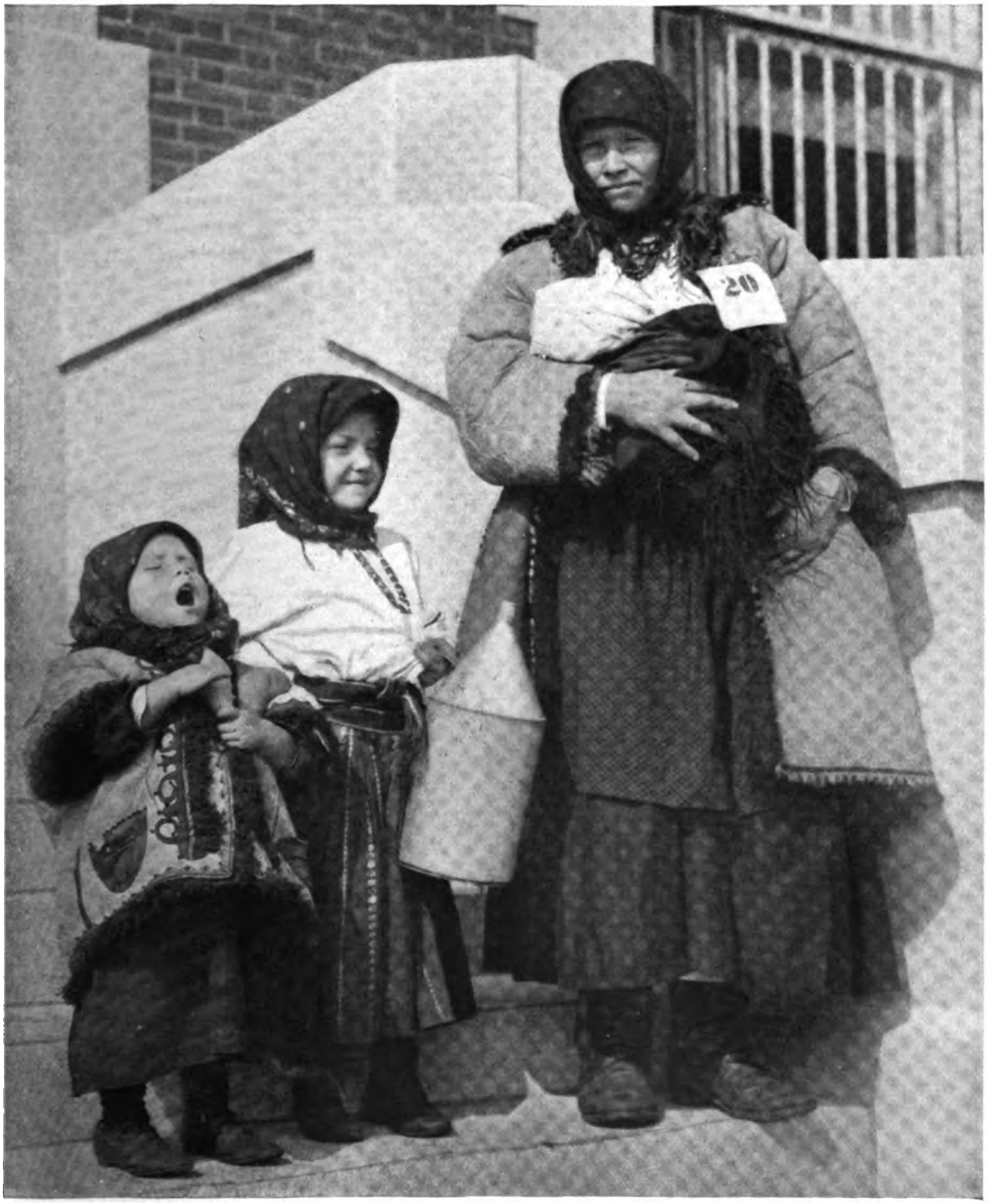
Three-fifths of all the Roumanians who have come to America were farm laborers in the old country; yet it is rare, indeed, that one is found in the United States elsewhere than in the factory, the mine, and the railroad construction gang.



Photograph from Frederic C. Howe

A SLOVAK MOTHER AND CHILDREN

The Slovaks are an agricultural people, occupying all of northern Hungary except Ruthenian territory. Nearly a half million of them have come to America, though many return to Europe. They came so rapidly in the years before the war that whole villages were all but depopulated, and wages increased 100 per cent in many places as a result of their departure for America.



Photograph from Frederic C. Howe

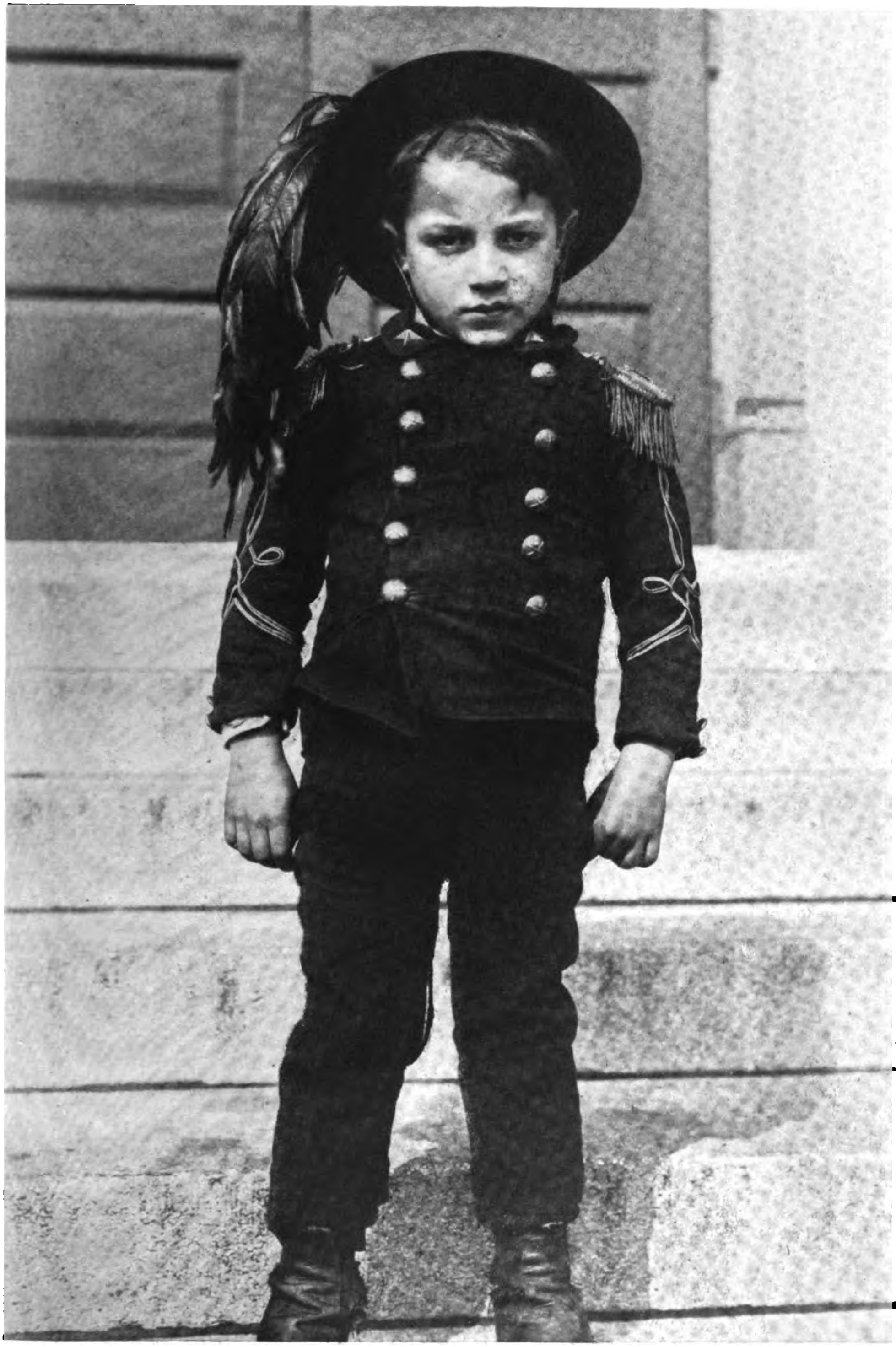
A RUSSIAN MOTHER AND HER FLOCK

"No, I was not sleeping. I just couldn't help sneezing when the camera shutter clicked."

Photograph from Frederic C. Howe

A GREEK SOLDIER OF THE ROYAL GUARD

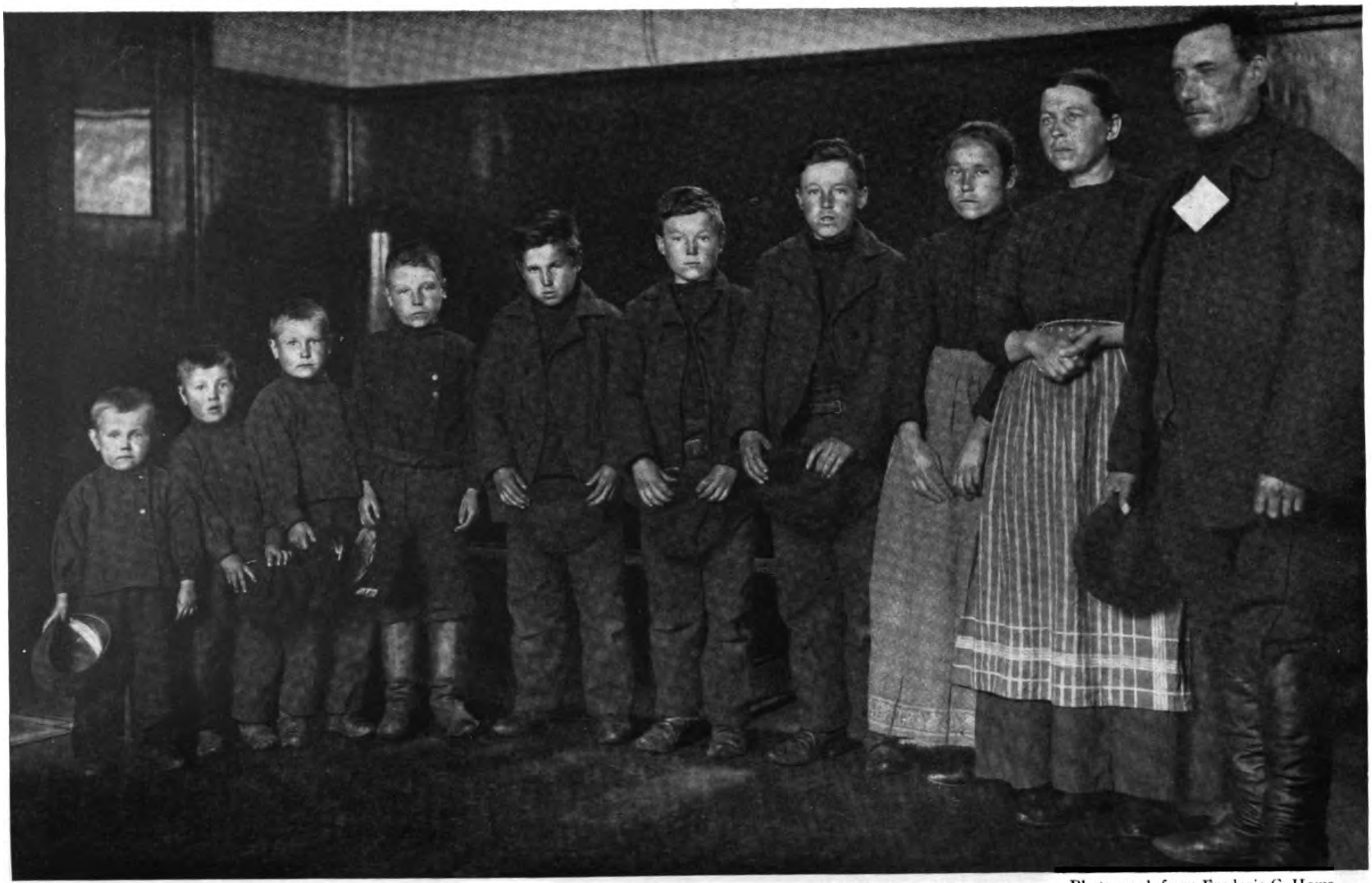
The Greek shoe-shining emporium and the Greek popular-priced restaurants have served to distribute the Hellenic immigrants better than almost any other race of the "new" immigration; and distribution is solving the problem of their assimilation.



Photograph from Frederic C. Howe

AN ITALIAN BOY DRESSED AS A SOLDIER

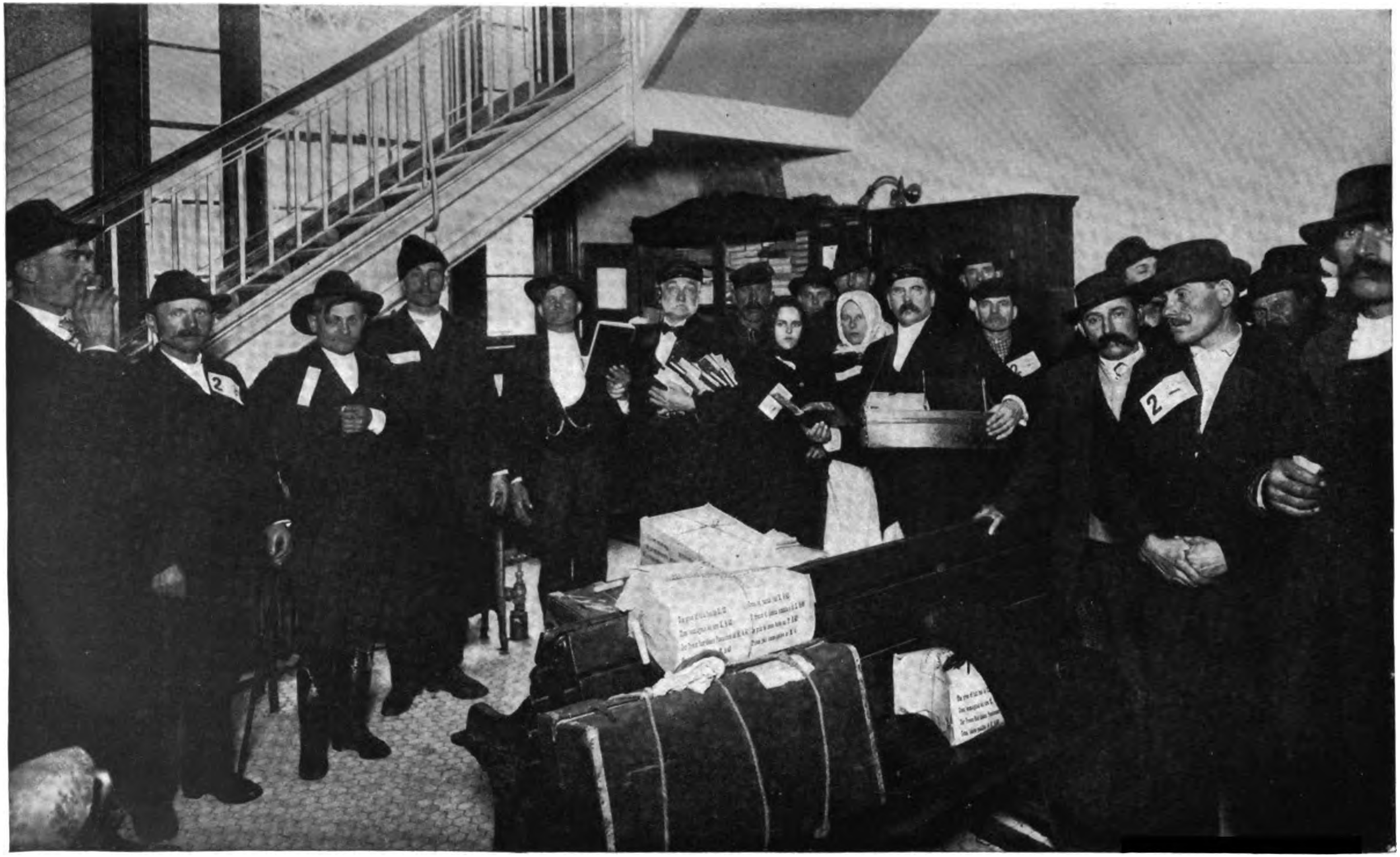
Who knows but that the blood of a Cæsar, an Anthony, or a Seneca may course through the veins of this little future American?



Photograph from Frederic C. Howe

A GERMAN FAMILY TRANSPLANTED TO AMERICA

The seventh son of a seventh son is not so rare in Germany, for next to the Russians the Germans have the largest families of any people in Europe. More than six million Germans have come to this country; but five million of them came more than 27 years ago.



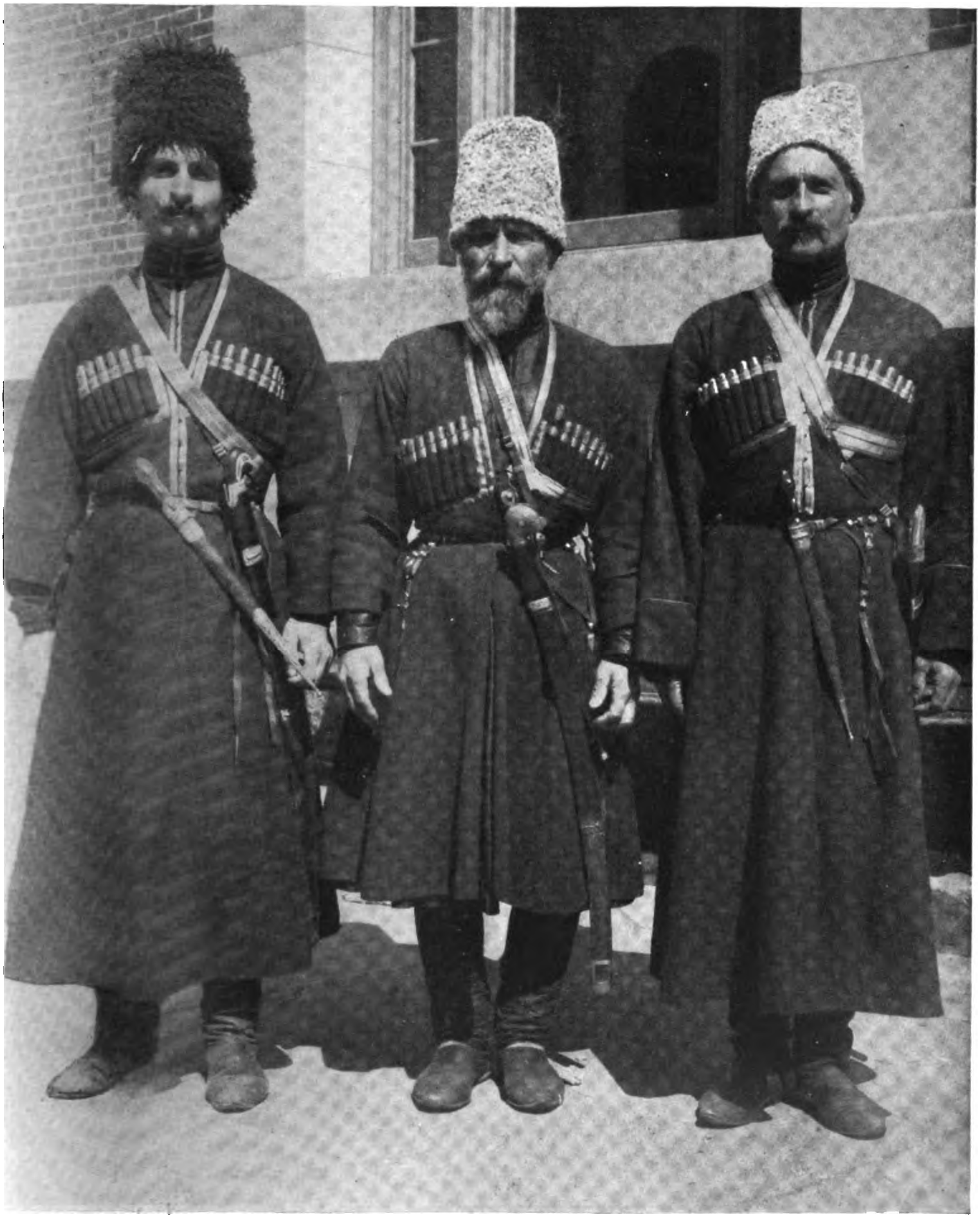
Photograph by A. F. Sherman

MISSIONARIES OF THE NEW YORK BIBLE SOCIETY WITH ELLIS ISLAND IMMIGRANTS

Nearly all the religious denominations and charitable organizations of New York take some part in helping the immigrants to steer clear of the pitfalls of the metropolis

A TYPICAL JEWISH FAMILY FROM RUSSIA

Among the Jews who came to America from Russia before the war were thousands of families like this one. Even amid direst poverty and the most insanitary surroundings many of them are able to triumph over dirt and disease by adhering to that remarkable code of personal hygiene laid down in the laws of Moses.



Photograph from Frederic C. Howe

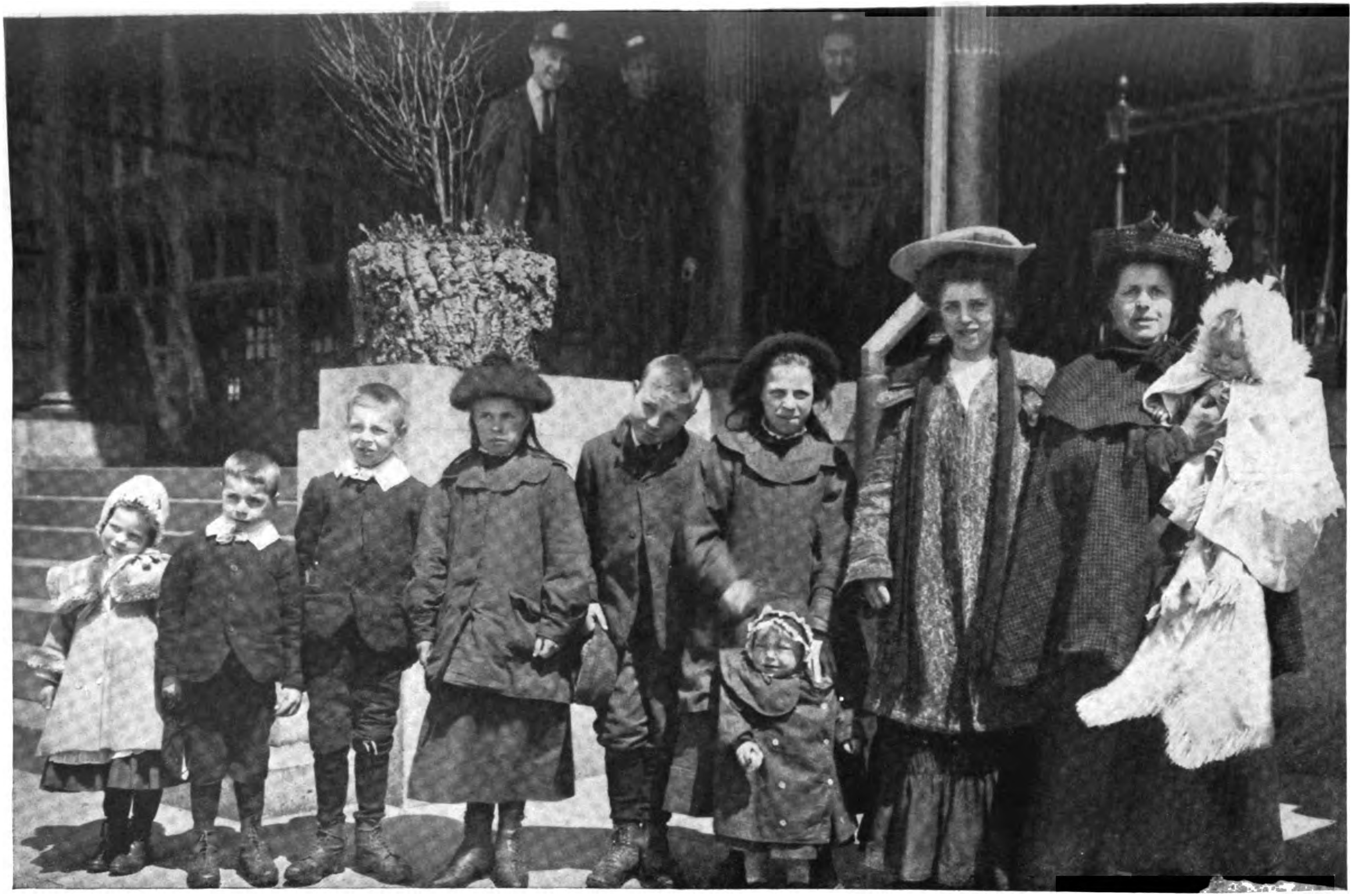
THREE COSSACKS AT ELLIS ISLAND

These warriors of the Russian plain make sturdy Americans—as industrious in peace as they were intrepid in battle

Photograph from Frederic C. Howe

A LARGE SCOTCH FAMILY

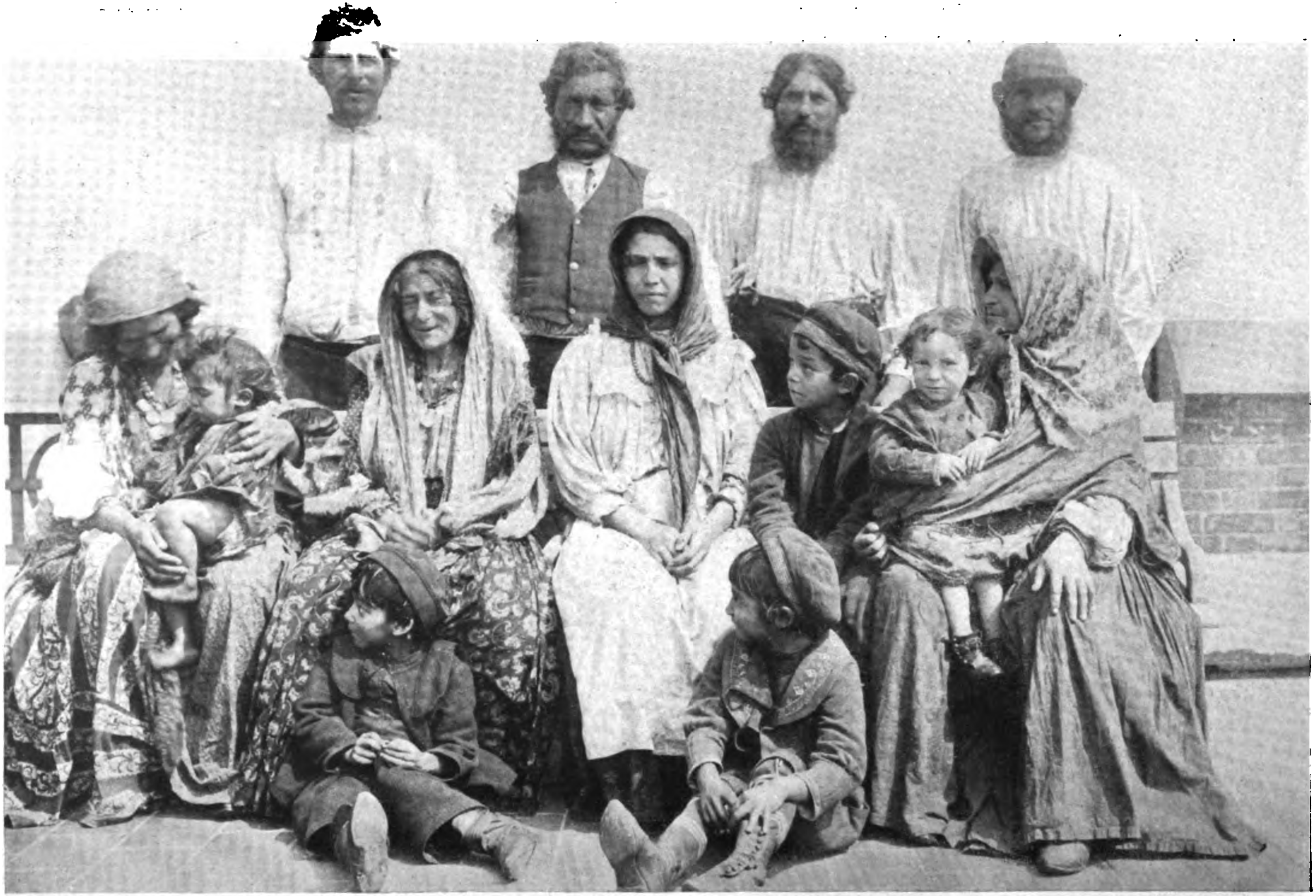
But for the fact that our immigrant population and the people of the rural districts are more given to marriage and to large families than the urban folk of native stock, America's growth would be at a standstill. Between the disinclination to marry and the tendency toward small families, American city-living folk of native ancestry today do not have enough children to reproduce the race.



Photograph from Frederic C. Howe

AN ENGLISH FAMILY: MOTHER AND NINE CHILDREN

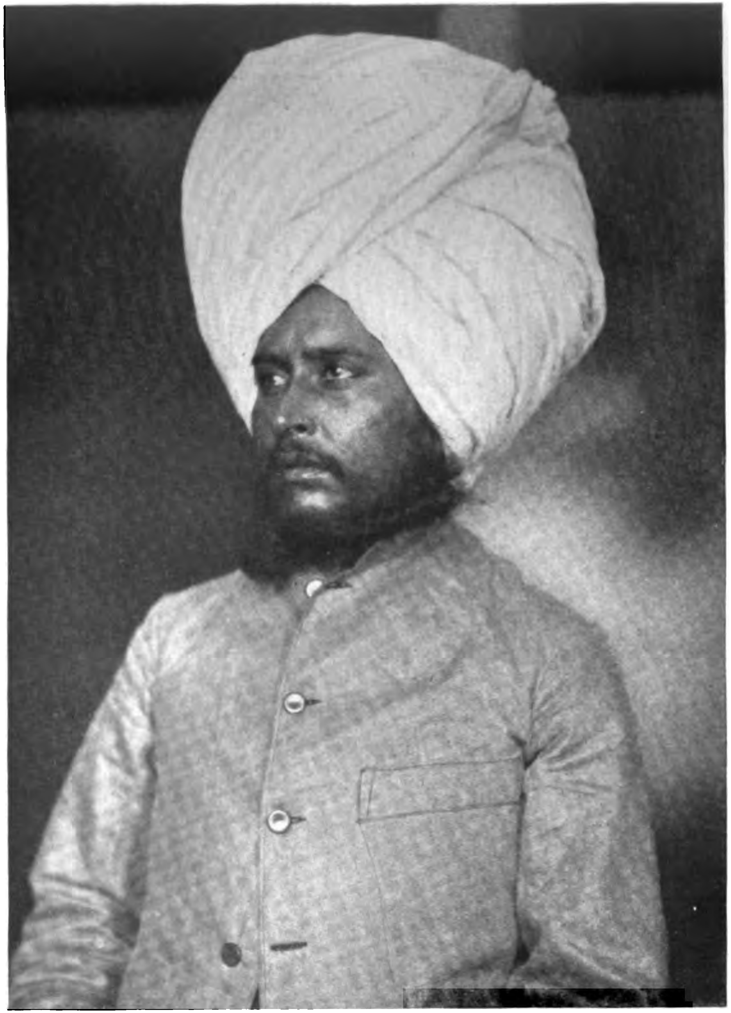
Like her sturdy prototypes of colonial times, this good mother has come to found in America a home for her posterity. Think of the self-denial it requires to feed nine hungry mouths and to clothe nine growing children in this era of high prices. Yet love has lightened labor.



Photograph from Frederic C. Howe

A GROUP OF SERBIAN GYPSIES

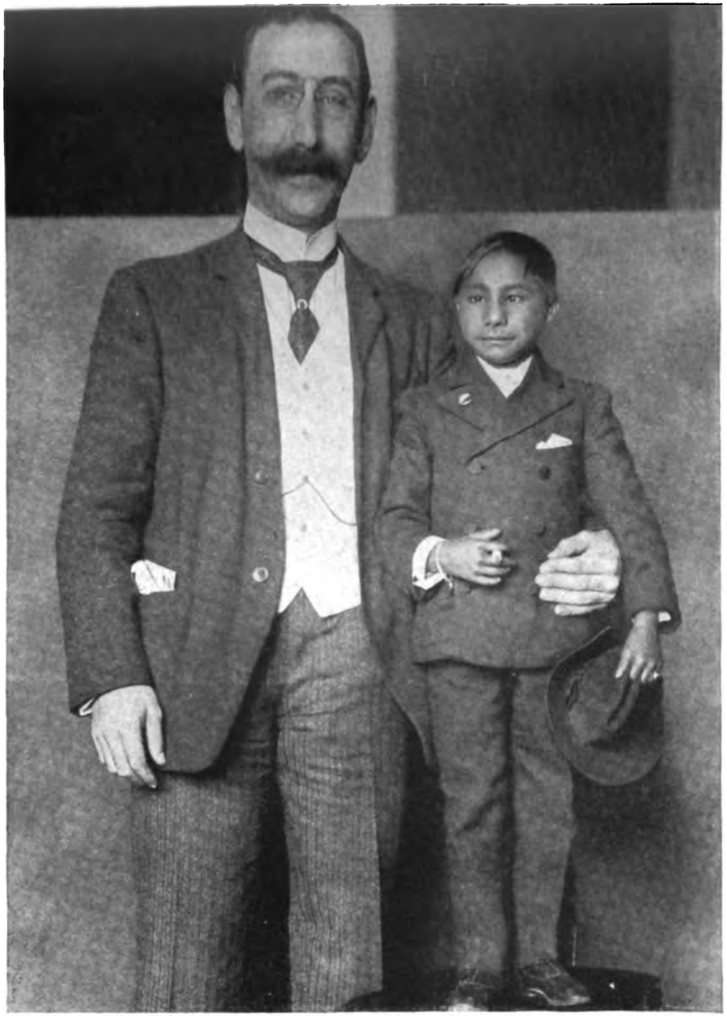
Ethnological measurements show that even the very bones of the immigrant's body are warped into an American type in his children and his children's children. What could be more eloquent than this of the success of the processes of Americanization as the generations rise and pass!



Photograph from Frederic C. Howe

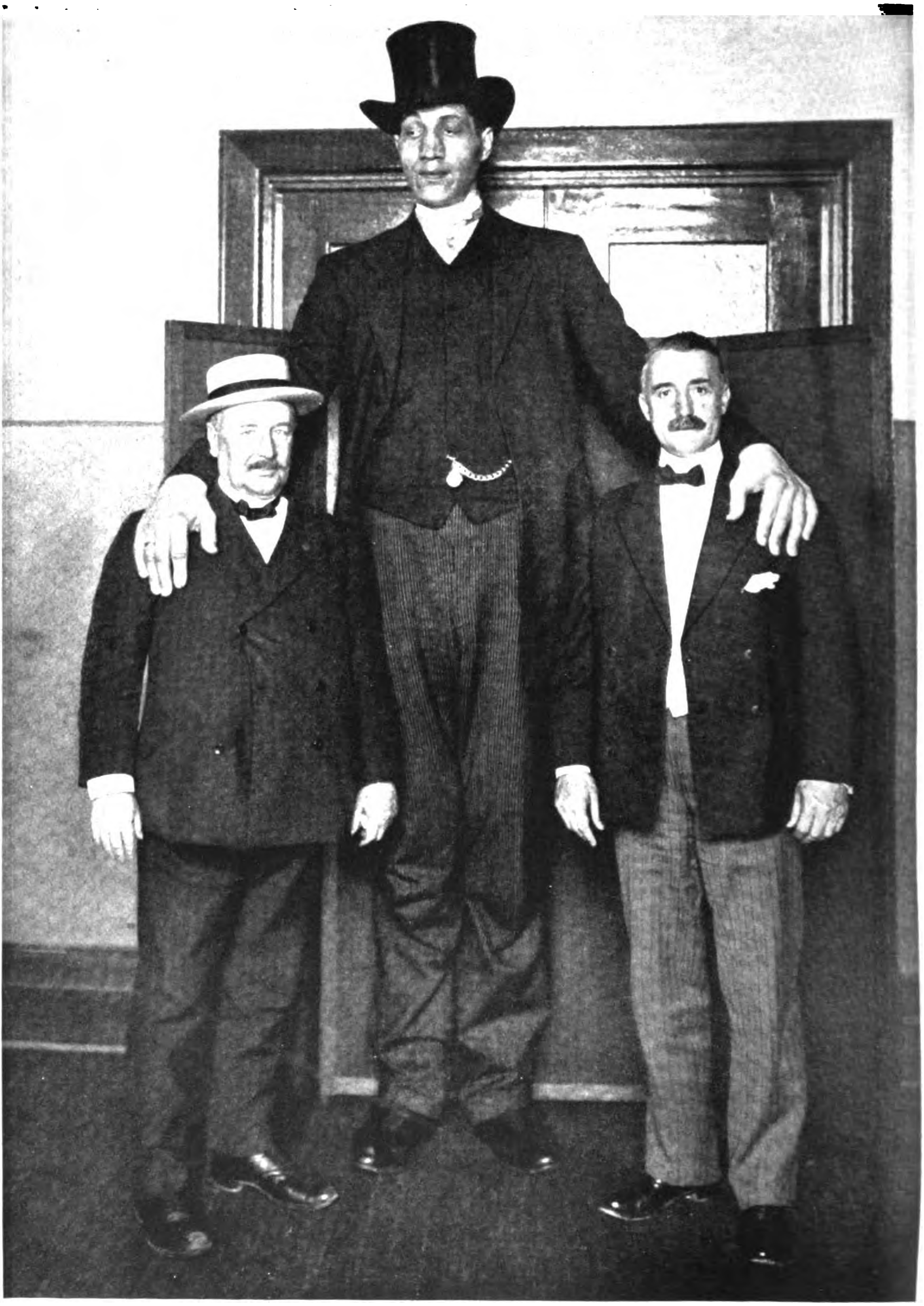
A HINDU FROM INDIA

In no other race furnishing immigrants to America is the percentage of women coming so small as among the Hindus



A DWARF FROM BURMA

He is not too small to enjoy his cigarette nor to be proud of his bracelet



Photograph from Frederic C. Howe

A RUSSIAN GIANT, SEVEN FEET NINE INCHES TALL, WITH TWO MEN OF NORMAL SIZE

The Russians who come to America are a sturdy, hardy, seasoned race, but not all of them are as large as this giant, who can look down upon 99.9999 per cent of all mankind

PRIZES FOR THE INVENTOR*

Some of the Problems Awaiting Solution

By Alexander Graham Bell

WHAT a glorious thing it is to be young and have a future before you. To the graduates, especially, of a scientific technical school like the McKinley Manual Training School the outlook for the future looks bright and promising.

When I was a young man the institutions of learning, the higher schools and colleges, paid a great deal more attention to the teaching of Latin and Greek than to the study of science; they made scholars rather than scientists.

The war has changed all that, and the man of science will be appreciated in the future as he never has been in the past. Knowledge is power; and we now realize that the nation that fosters science becomes so powerful that other nations must, if only in self-defense, adopt the same plan. It is safe to say that scientific men and technical experts are destined in the future to occupy distinguished and honorable positions in all the countries of the world. Your future is assured.

WE PROGRESS FROM CANDLES TO ELECTRICITY IN ONE LIFETIME

I said it was a glorious thing to be young; but it is also a glorious thing to be old and look back upon the progress of the world during one's own lifetime.

Now, I don't mean to insinuate that I am old, by any means! I had in mind an old lady, who is now living in Baltimore, at the age of one hundred and seven—she is now in her one hundred and eighth year—with mental faculties unimpaired. Possessed of a bright and active mind, she is able, from her own personal recollections, to look back upon a whole century of progress of the world.

She was born in England and came over to America when quite young; and it is rather interesting to know what brought the family here. The father was a wholesale candlemaker in London and his business was ruined by the introduction of gas!

Gas as an illuminant is now being replaced by electric lighting; and there are many people in this room who saw the first electric lights.

I, myself, am not so very old yet, but I can remember the days when there were no telephones.

I remember, too, very distinctly when there were no automobiles here. There were thousands of horses, and Washington, in the summer-time, smelled like a stable. There were plenty of flies, and the death rate was high.

Now, it is very interesting and instructive to look back over the various changes that have occurred and trace the evolution of the present from the past. By projecting these lines of advance into the future, you can forecast the future, to a certain extent, and recognize some of the fields of usefulness that are opening up for you.

Here we have one line of advance from candles and oil lamps to gas, and from gas to electricity; and we can recognize many other threads of advance all converging upon electricity. We produce heat and light by electricity. We transmit intelligence by the telegraph and telephone, and we use electricity as a motive power. In fact, we have fairly entered upon an electrical age, and it is obvious that the electrical engineer will be much in demand in the future. Those of you who devote yourselves to electrical subjects will certainly find a place and room to work.

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*An address to the graduating class of the McKinley Manual Training School, Washington, D. C., February 1, 1917, revised for the NATIONAL GEOGRAPHIC MAGAZINE.

THE NEW YORK SKY-LINE AT NIGHT

Even more wonderful than the dizzy heights of the buildings is the blaze of electricity radiating from them. People now living remember the time when there was no gas and candles were universal (see page 131).

FROM THE "HOBBY-HORSE" TO THE MOTOR-CYCLE OF 130 MILES SPEED

Then there is that other line of advance typified by the substitution of automobiles for horse-drawn vehicles. In line with this is the history of the bicycle. First, we had the old French "hobby-horse," the ancestor of all our bicycles and motor-cycles. Upon this you rode astride, with your feet touching the ground, and propelled the machine by the action of walking. Then came the old "bone-racker," in which your feet were applied to pedals attached to a crank-shaft on the front wheel of the machine.

This was superseded by a bicycle with an enormous front wheel, about six feet in height, with a little one behind—a most graceful machine, in which the rider appeared to great advantage. There was none of that slouchy attitude to which we are so accustomed now. The rider presented a graceful and dignified appearance, for he had perforce to sit upright, and even lean a little backward, to avoid the possibility of a header! The large wheel also appeared behind and the small one in front, and a tumble over backward was felt to be less disastrous than a header forward. It was much safer to alight upon your feet behind than to be thrown out forward upon your head.

Then came the "safety bicycle"—a return to the form of the old "hobby-horse," but not a "bone-racker," because provided with rubber tires. In this machine the power was transmitted from the feet to the wheels by means of gearing. This is still the form of the modern bicycle; but a gasoline motor has been added to do the work of the feet, giving us the power of going faster than railroad trains, on the common roads of the country, and without any physical exertion at all. I believe the speed record upon race-tracks stands at about 137 miles an hour.

MANY CHANCES FOR THE INVENTOR

On every hand we see the substitution of machinery and artificial motive power for animal and man power. There will therefore be plenty of openings in the future for young, bright mechanical engineers working in this direction.

There is, however, one obstacle to further advance, in the increasing price of the fuel necessary to work machinery. Coal and oil are going up and are strictly limited in quantity. We can take coal out of a mine, but we can never put it back. We can draw oil from subterranean reservoirs, but we can never refill them again. We are spendthrifts in the matter of fuel and are using our capital for our running expenses.

In relation to coal and oil, the world's annual consumption has become so enormous that we are now actually within measurable distance of the end of the supply. What shall we do when we have no more coal or oil!

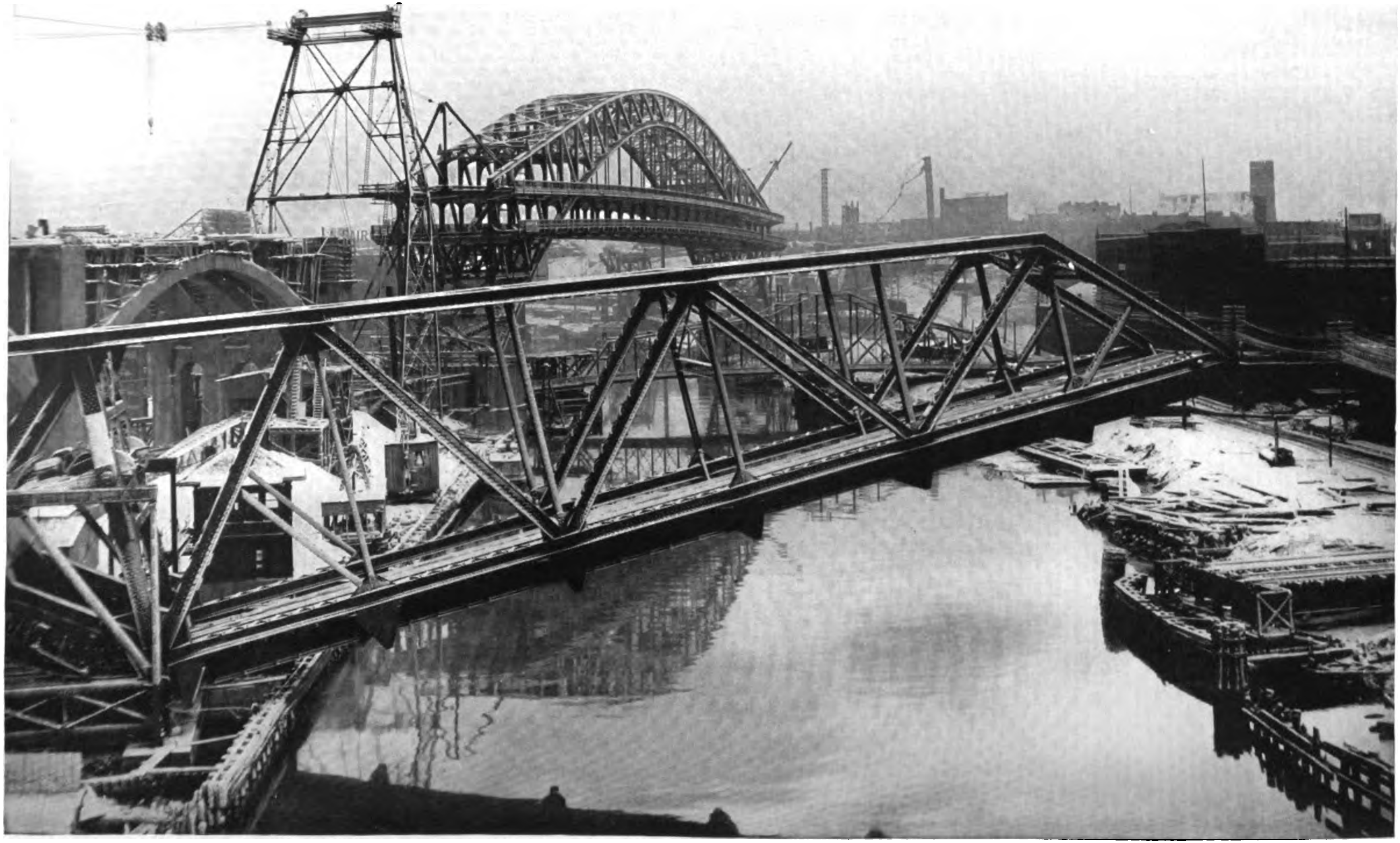
Apart from water power (which is strictly limited) and tidal and wave power (which we have not yet learned to utilize), and the employment of the sun's rays directly as a source of power, we have little left, excepting wood, and it takes at least twenty-five years to grow a crop of trees.

POSSIBILITIES OF ALCOHOL

There is, however, one other source of fuel supply which may perhaps solve this problem of the future. Alcohol makes a beautiful, clean, and efficient fuel, and, where not intended for consumption by human beings, can be manufactured very cheaply in an indigestible or even poisonous form. Wood alcohol, for example, can be employed as a fuel, and we can make alcohol from sawdust, a waste product of our mills.

Alcohol can also be manufactured from corn stalks, and in fact from almost any vegetable matter capable of fermentation. Our growing crops and even weeds can be used. The waste products of our farms are available for this purpose and even the garbage from our cities. We need never fear the exhaustion of our present fuel supplies so long as we can produce an annual crop of alcohol to any extent desired.

The world will probably depend upon alcohol more and more as time goes on, and a great field of usefulness is opening up for the engineer who will modify our



A LABYRINTH OF BRIDGES ACROSS CUYAHOGA RIVER, CLEVELAND, OHIO, INCLUDING THE NEW HIGH-LEVEL BRIDGE IN COURSE OF CONSTRUCTION machinery to enable alcohol to be used as the source of power.

Evolution in science has not always been accomplished by a series of gradual changes, each small in itself, but cumulative in effect. There have also been sudden "mutations" followed by advances of knowledge by leaps and bounds in a new direction, and the establishment of new and useful arts never before even dreamed of by man.

Although Clerk-Maxwell and others had long ago enunciated the theory that light and electricity were vibratory movements of the so-called "ether" or luminiferous medium of space, differing chiefly in frequency from one another, the world was not prepared for the experiments of Hertz, who demonstrated the reality of the conception and actually measured the wave-length of electrical discharges. Still less was it prepared for the discovery that brick walls and other apparently opaque objects were as transparent to the Hertzian waves as glass is to light. These experiments formed the basis for numerous other startling discoveries and practical applications for the benefit of man.

WE CAN SEE OUR OWN HEARTS BEAT

Flesh proved to be transparent to the Roentgen rays, and the world was fairly startled by the first X-ray photographs of the bones in the living human hand. Now physicians and surgeons use X-ray lamps to enable them to see bullets and other objects imbedded in flesh, and have even devised means of observing the beating of the heart and the movements of other internal organs without pain to their patients.

Other developments of the Hertzian waves have resulted in the creation of the new art of wireless telegraphy. Most of us, I think, can remember the first S.O.S. signals sent out by a ship in distress and the instant response from distant vessels equipped with the Marconi apparatus. Then came the rush of vessels to the scene of disaster and the rescue of the passengers and crew.

Developments of wireless telegraphy are proceeding with great rapidity, and no man can predict what startling discoveries and applications may appear in the near future. Here may be an opening for some of you, and I know of no more promising field of exploration to recommend to your notice.

HONOLULU EAVESDROPS WHILE WASHINGTON TALKS TO PARIS

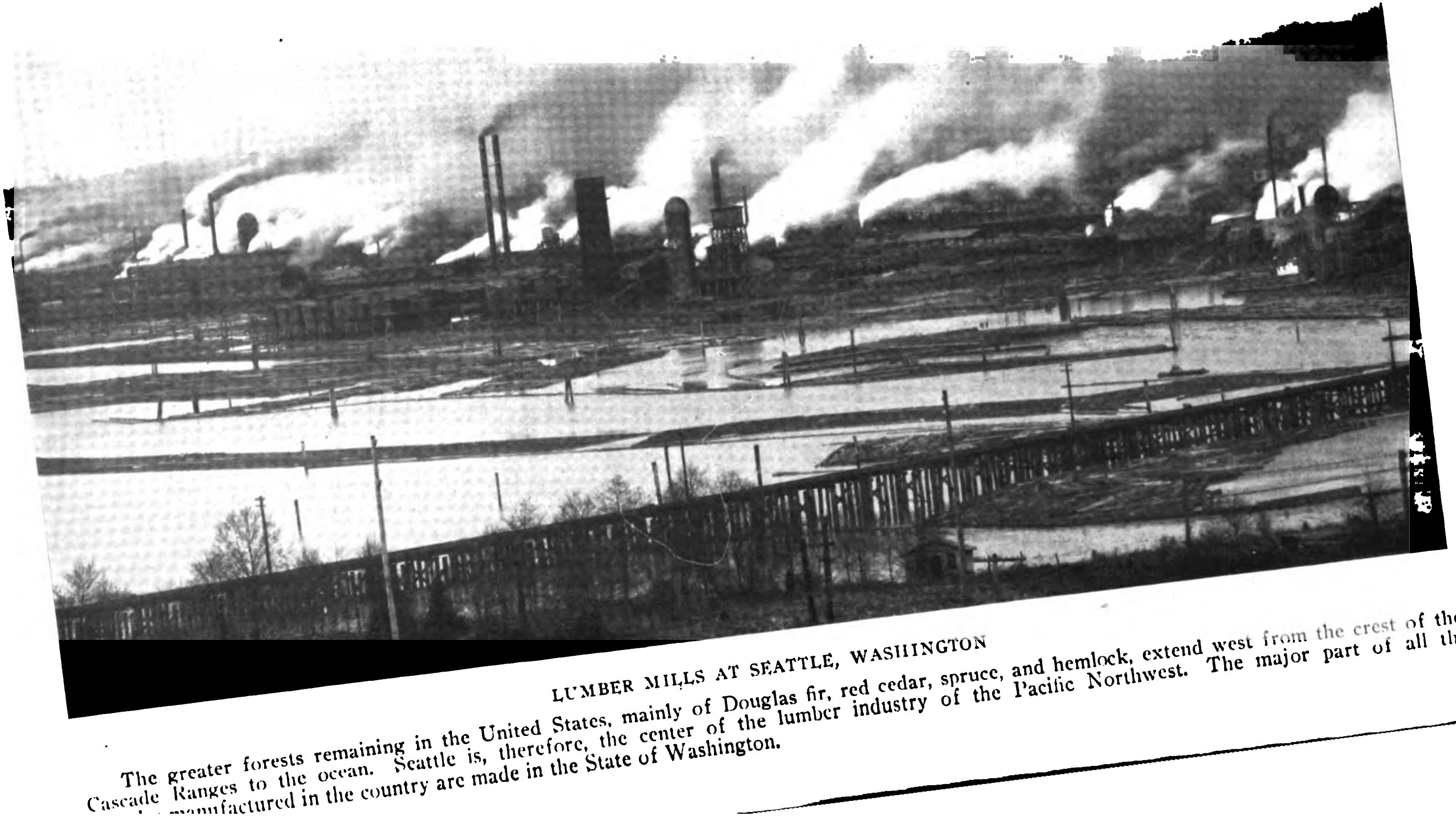
Already privacy of communication has been secured by wireless transmitters and receivers "tuned," so to speak, to respond to electrical vibrations of certain frequencies alone. They are sensitive only to electrical impulses of definite wave-length. The principle of sympathetic vibration operating tuned wireless receivers has also been applied to the control of machinery from a distance and the steering of boats without a man on board. The possibilities of development in this direction are practically illimitable, and we shall probably be able to perform at a distance by wireless almost any mechanical operation that can be done at hand.

Still more recently wireless telegraphy has given birth to another new art, and wireless telephony has appeared. Only a short time ago a man in Arlington, Va., at the wireless station there, talked by word of mouth to a man on the Eiffel Tower in Paris, France. Not only that, but a man in Honolulu overheard the conversation! The distance from Honolulu to the Eiffel Tower must be 8,000 miles at least — one-third the distance around the globe—and this achievement surely foreshadows the time when we may be able to talk with a man in any part of the world by telephone and without wires.

OUR MOST CHERISHED THEORIES UPSET BY A WOMAN

The above illustrations exhibit what we might call "mutations" of science; but the greatest of all these mutations was the discovery that opened the twentieth century, and I may add for the encouragement of our young lady graduates that it was made by a woman. I allude to the discovery of radium by Madame Curie of Paris.

Radium has recently upset our most cherished theories of matter and force. The whole subject of chemistry has to be



LUMBER MILLS AT SEATTLE, WASHINGTON

The greater forests remaining in the United States, mainly of Douglas fir, red cedar, spruce, and hemlock, extend west from the crest of the Cascade Ranges to the ocean. Seattle is, therefore, the center of the lumber industry of the Pacific Northwest. The major part of all the manufactured in the country are made in the State of Washington.

rewritten and our ideas of the constitution of matter entirely changed. Here is a substance which emits light and heat and electricity continuously without any apparent source of supply. It emits light in the dark, and in a cool room maintains itself constantly at a higher temperature than its environment.

It emits the Roentgen rays without any electrical machinery to produce them, and we have now discovered emanating from that substance several different kinds of rays of the unknown or X-ray variety; and we now recognize the Alpha, Beta, and Gamma rays as distinct varieties, having different properties.

Though radium behaves like an elementary substance, it is found in process of time to disintegrate into other elementary substances quite different from the original radium itself. Helium is one of its products, and, after several transmutations, it apparently turns into lead!

Our forefathers believed firmly in the transmutation of metals, one into the other, and vainly sought a means of transmuting the baser metals into gold. Radium shows that there is some foundation for the transmutation theory, and that at least some of the so-called elements originate by a process of evolution from other elements quite distinct from themselves. Where this line of development is going to lead is a problem indeed, and radium still remains the great puzzle of the twentieth century.

DYING OF THIRST IN A FOG

I cannot hope to bring to your attention all of the problems that are awaiting solution, but I think it may be interesting to you to hear of a few upon which I myself have been working. What interests me will probably interest you, and perhaps some of you may carry out the experiments to a further point than I have done.

You know that although I am a lover of Washington, yet, when the summertime comes, I go just as far away from Washington as I can in the direction of the North Pole. I have a summer place in Cape Breton Island, Nova Scotia, where I can always be sure of cool, fresh breezes, while you poor people are broiling here in Washington.

A good many of the people on Cape Breton Island are fishermen, who make their living on the Banks of Newfoundland; and one of the men employed upon my place had two uncles who were fishermen on the Banks. One day they left their vessel in a dory to look after their nets, and while they were gone a fog came up and they were unable to find their way back. The dory drifted about in the ocean for many days and was then picked up with their dead bodies on board; they had perished from exposure and thirst.

Now it is not a very unusual thing on the Banks of Newfoundland for fishermen to be separated from their vessels by fog. Every year dories are picked up at sea, and the occupants are often found to be suffering terribly from thirst. They have found "water, water, everywhere, but not a drop to drink." Now, it seemed to me that it was really a reflection upon the intelligence of man that people should die of thirst in the midst of water.

There is the salt water of the sea, and all you have to do is to separate the salt from the water and drink the water. That is one problem.

CONDENSING THE WATER VAPOR IN THE HUMAN BREATH

But there is also the fog which prevents you from reaching your vessel, and what is fog but fresh water in the form of cloud. Therefore all you have to do is to condense the fog and drink it. That is another problem.

But there is still another alternative. Water vapor exists in your breath. Why not condense your breath and drink it? This problem is easily solved; just breathe into an empty tumbler and at once you have a condensation of moisture on the inside. If you have the patience to continue the process for a few minutes, you will soon find clear water at the bottom of the tumbler.

I took a bucket of cool salt water from the sea, put it down in the bottom of a boat between my knees, and then put into it a large empty bottle the size of a beer bottle, which floated in the water with the neck of the bottle resting on the edge of the bucket. Then I took a long glass tube, over a meter in length, and put one end into the bottle and the other end in my mouth. I sat back comfortably in a chair with the tube between my lips and inhaled through the nostrils and blew down through the tube. This process was so easily performed that I found I could read a book while it was going on.

I therefore continued the experiment for over two hours, and then I found a considerable amount of water in the bottle, quite enough for a moderate drink. It might not be very much for us, but if you were dying of thirst on the open sea you would be glad enough to get what was there. I tasted the water and found it quite fresh, although I must confess it did not have a very palatable taste; in fact, the water condensed from my breath had a taste of—of tobacco! But I don't suppose that would have mattered much to a man who was dying of thirst.

I have also made experiments to condense drinking water from fog. A large pickle jar was provided and two long glass tubes were let down through the cork. The jar was then submerged at the wharf, with the two pipes sticking up above the surface. The experiment was then made to pump fog down through one of the pipes, the other serving as a vent. This was accomplished by means of a pair of bellows provided with a spiral spring between the handles to keep them apart. This apparatus was fastened on top of the wharf. A heavy log of wood was floated upon the water below, connected by means of a string with the upper handle of the bellows.

THE CORK THAT FAILED

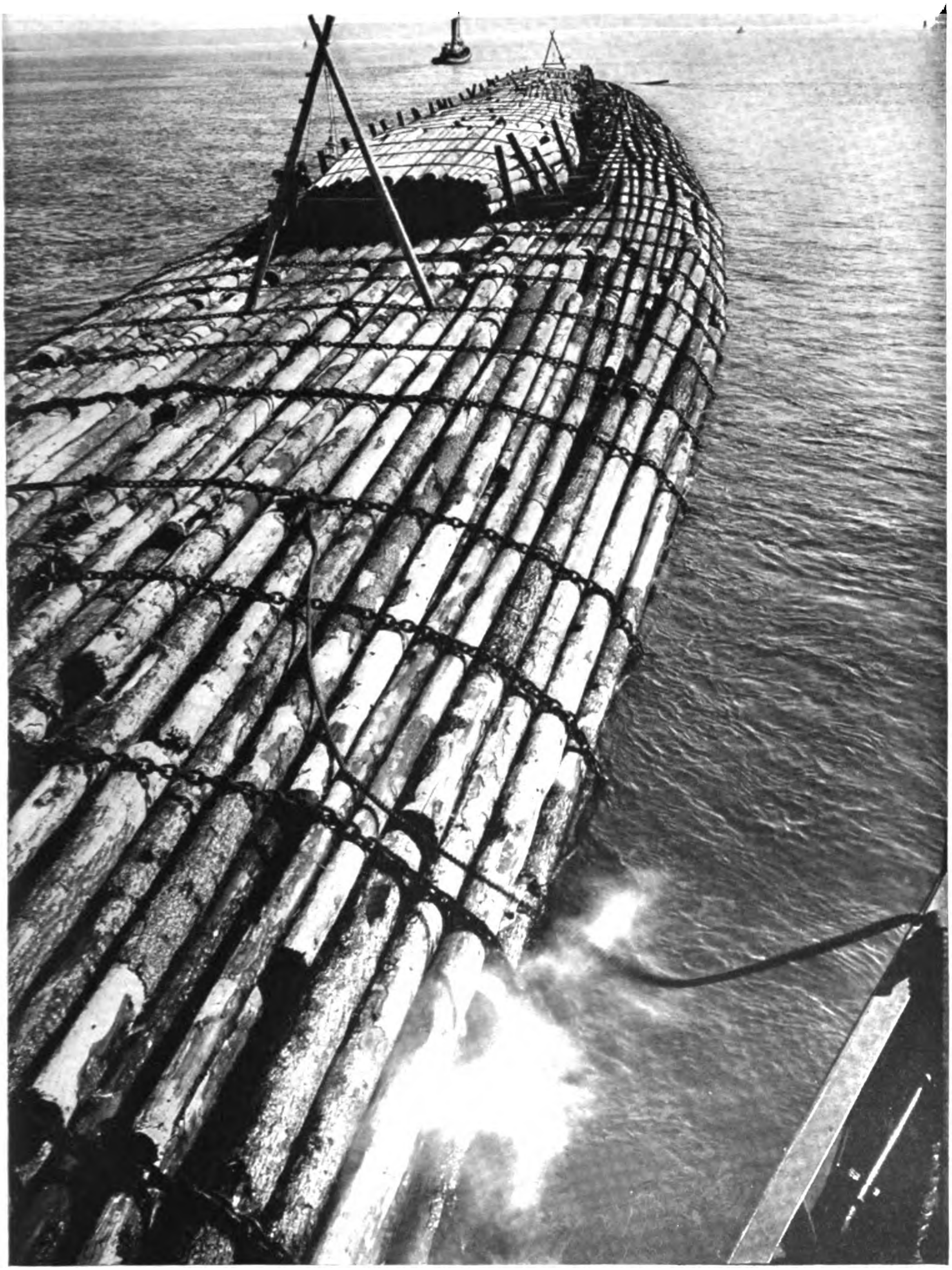
The waves moved this log up and down and worked the bellows. The nozzle was connected to one of the pipes leading to the submerged empty jar and at once the bellows began to pump the fog into the jar. It continued pumping all night, and I let it go on pumping all of the next day, because there was to be a meeting of men on my place the next evening, and I thought it would be interesting to open the jar at the men's meeting. With great ceremony the jar was removed to the warehouse and was found to be nearly full of beautiful clear water. A British naval officer was present and offered to be the first to taste the water condensed from fog. He took a good mouthful of it, while the men gathered around in great excitement and shouted, "Fresh or salt?"

He did not reply, but made a face. He then rushed for the window, spat the water out, and exclaimed, "Salt!" Now, this failure did not by any means prove that the process was wrong, but simply showed that it might be advisable in the future, if you use a cork, to employ one that fits tightly and does not leak. The one I used had a hole in it, I found out afterward.

An involuntary experiment relating to the condensation of fresh water from the sea was made in Cape Breton. A man fell overboard and was rescued, with his clothes wringing wet with sea-water. There was a cold wind blowing and he took refuge in a little cabin on the boat covered with a tarpaulin awning. In a little time he began to steam. The heat of his body warmed the sea-water in his clothes, and there actually arose a cloud of steam which condensed on the cold tarpaulin and ran down the sides. It was fresh water, and if it had been collected in a jar there would have been quite enough for a drink.

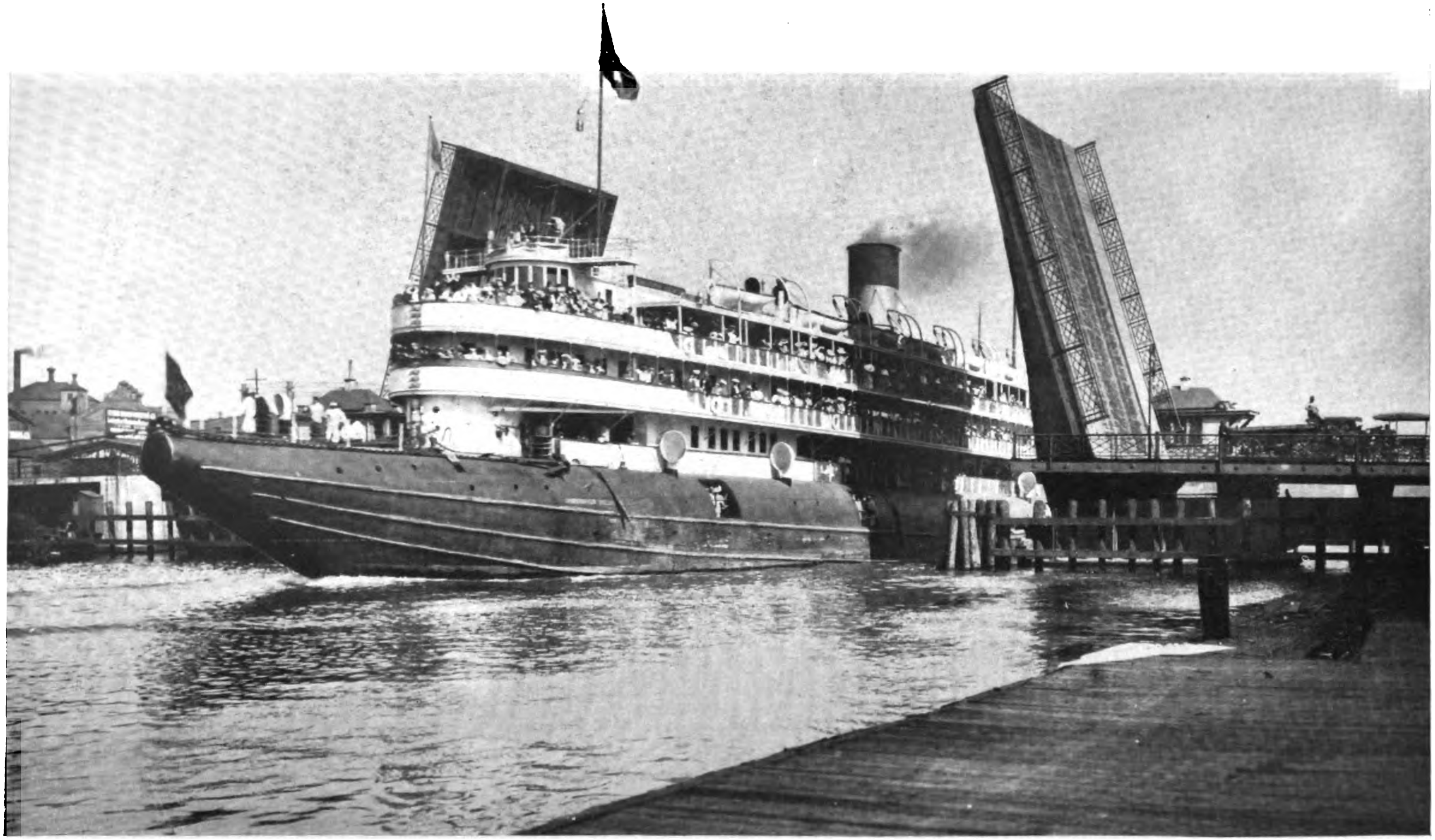
"WE DO NOT BOIL THE SEA"

On large ocean steamers all the drinking water used is condensed from the sea; and we somehow or other have the idea that it is necessary to boil the sea-water, or at least have it very hot, and then condense it by means of ice or something very cold. Now, that is not necessary at all. Just think of this: All the fresh water upon the globe comes from the sea, and we do not boil the sea. Water vapor is given off by the sea everywhere and at all temperatures; it is even evaporated from ice and snow. Of course, the warmer the sea-water is, the greater is the amount of water vapor thrown out; but water vapor is everywhere present, and the main point in condensation is that it is removed from the surface by the action of the wind and carried to cooler places, where condensation occurs



BRINGING INTO SAN DIEGO HARBOR A LOG RAFT CONTAINING 5,000,000 FEET

The raft has journeyed down the coast from Portland, Oregon, where this type of raft was invented



Photograph by Joseph Brown

PASSING A DRAWBRIDGE: MILWAUKEE, WISCONSIN

The advent, about 1890, of the whale-back type of cargo carriers revolutionized the transportation problems of grain and ore industries of the Great Lakes region. The steamer in the picture is a combination excursion and cargo whale-back type.

in the form of cloud or rain. No great amount of heat is required to produce evaporation and no great amount of cold is necessary to effect condensation.

Such considerations as these may lead to some cheap industrial process for the manufacture of fresh water from the sea. All that is necessary is a current of air over your salt water to remove the water vapor collected there, and then the carrying of this confined current into a cool reservoir where the water may condense.

THE THERMOS-BOTTLE IDEA APPLIED TO A WATER TANK

As little or no artificial heating is required, a great saving can be effected in the matter of fuel. It is extraordinary how wasteful we are in our means of producing heat and in retaining it after it has been produced. It is safe to say that a great deal more heat goes up the chimney than we utilize from a fire. Then when we cook our dinner or boil water, we allow the heat to escape by radiation and the things soon cool.

A cosy for our teapot, a fireless cooker for our dinner, and a thermos bottle for our heated liquids show how much heat may be conserved by simply taking precautions to prevent radiation. Our hot-water boilers are not protected by coverings of asbestos paper or other insulating material, so that the water gets too cool for a warm bath very soon after the fire is put out.

I have made experiments to ascertain whether some of the heat wasted by radiation could not be conserved by insulating materials, with rather astonishing results. A large tank of zinc was made which would hold a great deal of water. This was inclosed in a box very much larger than itself, leaving a space of about three or four inches all around, which was filled with wool. I then found that hot water put into that tank cooled almost as slowly as if it had been a thermos bottle.

I then attempted to save and utilize some of the heat given off by a student's lamp. A couple of pipes were led out of this insulated tank and placed in a hood over the lamp. Thus a circulation of water was effected. The water heated by the lamp found its way up into the tank and produced a sensible rise of temperature there. Next day when the lamp was again lighted it was found that the water in the tank still felt slightly warm. It had not lost all of the heat it had received at the former heating. When the lamp was again put out, the temperature of the tank was considerably higher than on the former occasion.

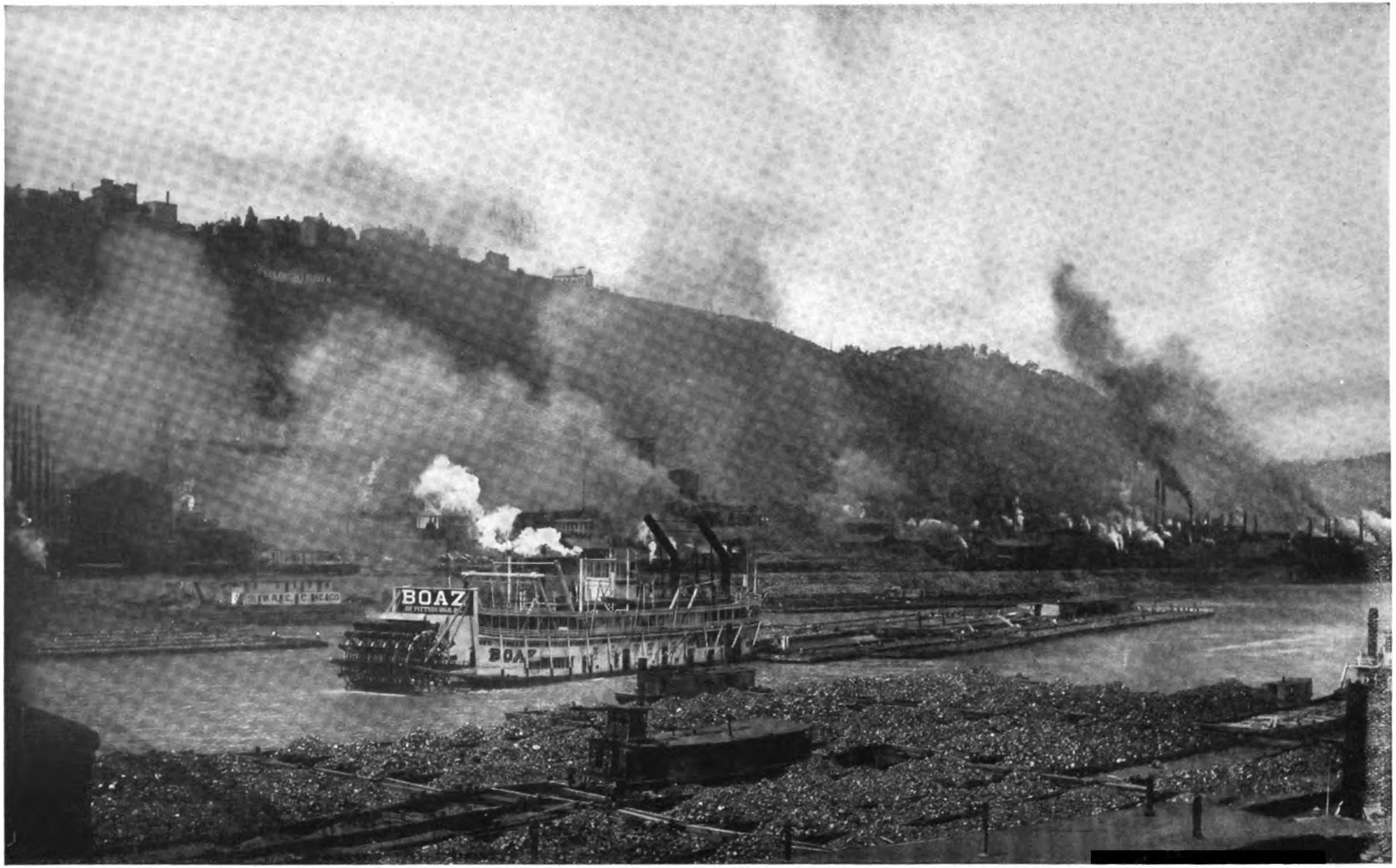
This process of heating was continued for a number of days, and it became obvious that a cumulative effect was produced, until at last the water in the tank became too hot to hold the hand in, and it was determined to see how long it would hold its heat. The temperature was observed from time to time, and more than a week after the lamp had been put out the water was still so warm that I used it for a bath.

CUTTING DOWN THE CHIMNEY TAX

Since then this insulated tank has been taken up to the attic of my house in Nova Scotia and has been installed there as a permanent feature. I have the habit of working at night and like to take a warm bath somewhere about 2 o'clock in the morning. Unfortunately the heating arrangements in the house have given out long before that hour and only cold water comes from the kitchen boilers. I connected the insulated tank with an iron pipe let down my study chimney in the hope of saving and utilizing some portion of the heat that escaped up the chimney every time the fire was lighted.

I have had this apparatus in use for over a year, and find that at any time of the day or night I am always sure of a warm bath from the heat that used to be wasted in going up the chimney. In this case there was only one straight pipe, so that the amount of heat recovered bears only a small proportion to that still wasted. A coil of pipe in the chimney or special apparatus there would, of course, be much more efficient.

I think that all the hot water required for the use of a household, and even for warming a house, could be obtained without special expenditure for fuel by utilization of the waste heat produced from



Photograph from Joseph E. Ransdall

THE DEPARTURE OF THE GREAT COAL FLEET, PITTSBURGH HARBOR

The use of anthracite coal is comparatively new. The year that our Declaration of Independence was signed anthracite had no more value than the most useless stone, and it was not until fifty years later that its effectiveness was discovered.

the kitchen fire and the heat given off by the illuminants employed.

Of course, water can only be heated to the boiling temperature; but there are many liquids that can be heated to a very much higher temperature than this without boiling. I took a tumbler of olive oil and heated it by means of a thin iron wire connected with a voltaic battery. I placed in the tumbler of oil a test-tube filled with water. In a short time the water was boiling, but the oil remained perfectly quiescent. If you store up hot oil instead of water you will have at your command a source of heat able to do all your cooking, and even produce steam power to work machinery.

We have plenty of heat going to waste in Washington during the summer-time, for the sun's rays are very powerful, and we do not use the roofs of our buildings except to keep off the rain. What wide expanses of roof are available in all our large cities for the utilization of the sun's rays! Simple pipes laid up on the roof and containing oil or some other liquid would soon become heated by the sun's rays. The hot oil could be carried into an insulated tank and stored. You could thus not only conserve and utilize the heat that falls upon the tops of your houses, but effect some cooling of the houses themselves by the abstraction of this heat.

THE REASON WE CANNOT KEEP OUR HOUSES COOL

I was once obliged, very much against my will, I can assure you, to remain in Washington right in the midst of the summer, and the thought kept constantly recurring to my mind, If man has the intelligence to heat his house in the winter-time, why does he not cool it in the summer? We go up to the Arctic regions and heat our houses and live. We go down to the Tropics and die. In India the white children have to be sent home to England in order to live, and all on account of the heat. The problem of cooling houses is one that I would recommend to your notice, not only on account of your own comfort, but on account of the public health as well.

Now, I have found one radical defect in the construction of our houses that absolutely precludes the possibility of cooling them to any great degree. You will readily understand the difficulty when you remember that cold air is specifically heavier than warm air. You can take a bucket of cold air, for example, and carry it about in the summer-time and not spill a drop; but if you make a hole in the bottom of your bucket, then, of course, the cold air will all run out.

Now, if you look at the typical tropical houses, you will find that they are all open on the ground floor. Supposing it were possible to turn on a veritable Niagara of cold air into a tropical house, it wouldn't stay there five minutes. It would all come pouring out through the open places below and through the windows and doors. If you want to find your leakage places, just fill your house with water and see where the water squirts out!

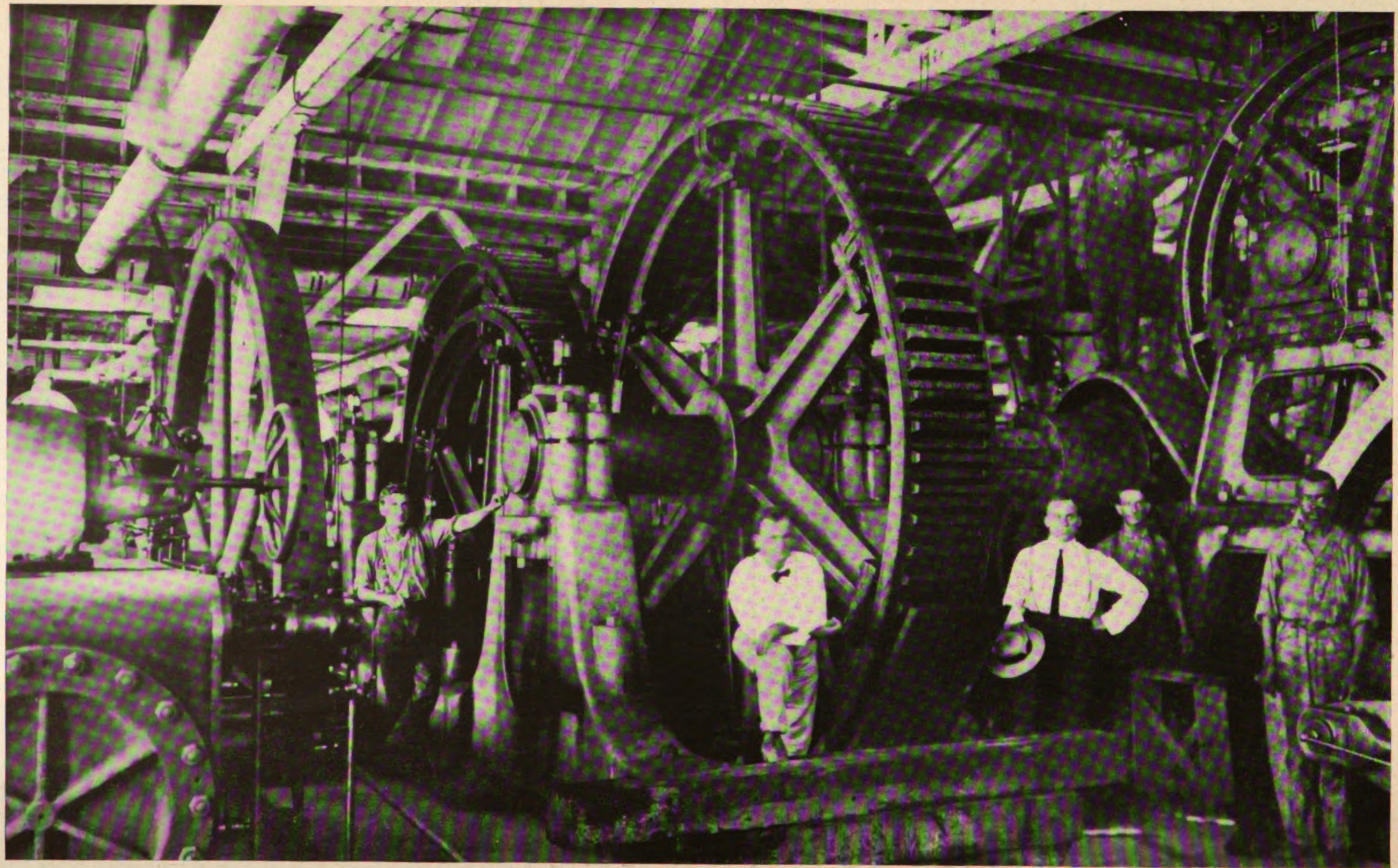
I began to think that it might be possible to apply the bucket principle to at least one room in my Washington home, and thus secure a place of retreat in the summer-time. It seemed to be advisable to close up all openings near the bottom of the room to prevent the escape of cold air and open the windows at the top to let out the heated air of the room.

MY OWN EXPERIMENTS

Now, it so happens that I have in the basement of my house a swimming tank, and it occurred to me that since this tank holds water, it should certainly hold cold air; so I turned the water out to study the situation. The tank seemed to be damp and the sides felt wet and slimy.

I reflected, however, that the condensation of moisture resulted from the fact that the sides of the tank were cooler than the air admitted. Water vapor will not condense on anything that is warmer than itself, and it occurred to me that if I introduced air that was very much colder than I wanted to use, then it would be warming up in the tank and becoming dryer all the time. It would not deposit moisture on the sides and would actually absorb the moisture there.

I therefore provided a refrigerator, in which were placed large blocks of ice



Photograph from M. L. Alexander

SUGAR-MAKING MACHINERY

The making of sugar, even after harvesting the cane, is a costly proceeding, and sugar mills have to install monster machinery to wring the sugar from the cane. This machinery is in use but three months out of every twelve and needs constant attention.

covered with salt. This was placed in another room at a higher elevation than the tank, and a pipe covered with asbestos paper was employed to lead the cold air into the tank.

The first effect was the drying of the walls, and then I felt the level of the cold air gradually rising. At last it came over my head. The tank was full, and I found myself immersed in cool air. I felt so cool and comfortable that it seemed difficult to believe that Washington stood sizzling outside. I climbed up the ladder in the swimming tank until my head was above the surface, and then found myself breathing a hot, damp, muggy atmosphere. I therefore speedily retreated into the tank, where I was perfectly cool and comfortable.

Guided by this experience, I tried another experiment in my house. I put the refrigerator in the attic and led the cold air downward through a pipe covered with asbestos into one of the rooms of the house. The doors were kept shut and the windows were opened at the top. The temperature in that room was perfectly comfortable, about 65 degrees.

At that time the papers were speaking of some ice plant that had been installed in the White House and congratulated the President upon a temperature of only 80 degrees when the thermometer showed 100 degrees outside. At this very time I enjoyed in my house a temperature of 65 degrees (the ideal temperature), with a delicious feeling of freshness in the air. Even when the air had risen to the same temperature as the rest of the house, as measured by a thermometer, the room still felt cool, because the air was drier, thus promoting perspiration that cooled the skin.

SELLING COLD AIR IN PARIS

In this connection I may say that there is a very interesting cooling plant in Paris, France, run by the Societé de l'Air Comprimé. Very many of the cafés and restaurants in Paris have cold rooms for the storage of perishable provisions, and these rooms are cooled by compressed air supplied by this company.

The plant consists of large pipes laid down under the streets of Paris, with small branch pipes leading into the cafés and restaurants. At a central station steam-engines pump air into the pipes and keep up a continuous pressure of from four to five atmospheres. As there are several hundred kilometers of these pipes under the streets of Paris, they form a huge reservoir of compressed air at the ground temperature.

In the cooling room of a café they simply turn a little cock and admit the compressed air into the room. A gas meter measures the amount of air admitted and charges are made accordingly.

The compressed air, by its expansion, produces great cold, and the cooling effect is still further increased by allowing the air to do work during the process of expansion. Dumb-waiters, elevators, and even sewing-machines are thus run very economically in connection with the system by means of compressed-air engines.

WILL OUR CITIES BE ARTIFICIALLY COOLED?

Now, it appears to me that this process might very easily be developed into a plan for the cooling of a whole city. You would simply have to turn a cock in your room to admit the fresh air; and if you then take precautions to prevent the cold air from running away by having your room tight at the bottom and open at the top, you could keep your room cool in the hottest summer weather.

I must confess that there is one other subject upon which I would like to say a few words before closing.

One of the great evils attending our civilization is the extreme congestion of the population into the larger cities, and one of the great problems of the future is how to spread the population more equally over the land.

The congestion is caused by difficulties of transportation; for, of course, it costs much more to send a person to a distant place than to one near at hand.

But did you ever think of this: that it also costs more to send a *letter* to a distant place than to one near at hand, and yet a two-cent stamp will carry your letter anywhere within the limits of the United States, and even beyond.

COULD POSTAGE STAMPS BE USED IN TRANSPORTATION OF PERSONS?

So many more letters are sent to places near at hand than to the remoter parts of the country that an average rate of postage very slightly in excess of the cost for short distances pays for the deficit on the longer routes. Now, the thought that I would like to put into your minds is this: Why could not the postage stamp principle be applied to the transportation of persons and goods? Why should it not be possible to charge an average rate for transportation instead of a rate increasing with the distance traveled?

We have already begun to apply this principle in municipalities. We no longer charge by distance in our large cities, and a five-cent fare will carry you anywhere you want to go within the limits of the municipality involved. As a consequence we find in these cities the poorer people abandoning tenement houses and going out into the country to live, where their children have room to grow. This relief of congestion pervades all classes of the community, and you see homes springing up everywhere in the suburbs of our great cities.

The benefits resulting from a uniform rate of transportation increase in geometrical proportion to the distance traveled, and the possible radius of travel should therefore be extended to the greatest practicable degree.

It may well be doubted whether it will ever be possible to buy a ticket for anywhere in the United States at an average rate; but it might be practicable to apply the principle to some at least of the smaller States. A citizen of Rhode Island, for example, might for a very small amount be enabled to travel anywhere within the limits of that State.

It would certainly be advisable to reduce our charges for transportation to the minimum amount possible. This can be done, first, by adopting the principle of an average rate, and, secondly, by reducing the actual cost of the transportation itself.

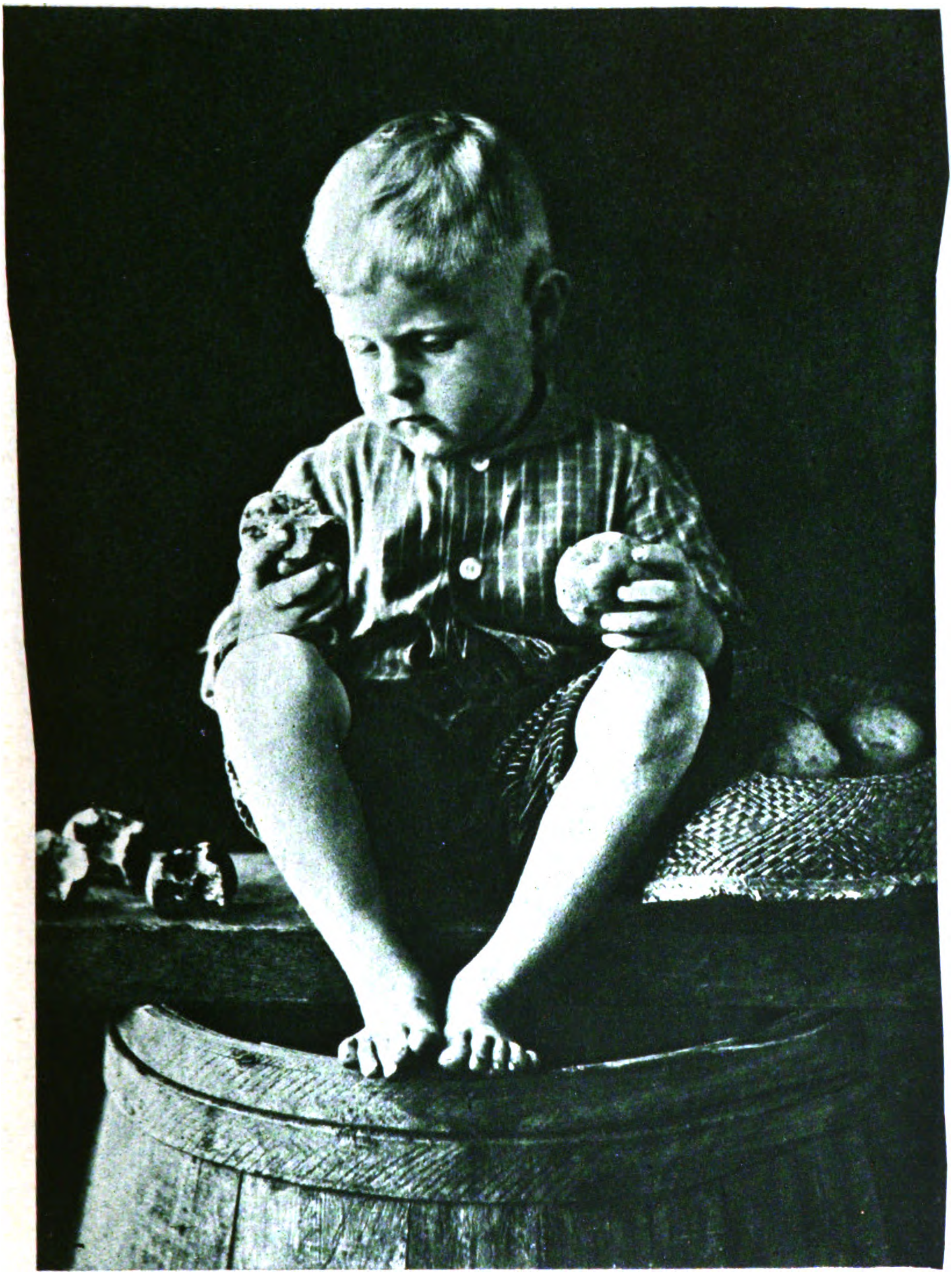
WILL AËRIAL LOCOMOTION SOLVE THE ROAD QUESTION?

Now, it is noteworthy that the main element of cost resides not so much in the vehicles and locomotives employed as in the cost of the roads on which they have to run; it is this element that increases with the distance.

The railroads, for example, have to expend millions of dollars in the construction of railroad tracks; and what would the automobile be worth without a good road on which to travel? Water transportation is much cheaper than railroad transportation, chiefly because we do not have to build roads in the sea for our ships.

I will conclude with this thought: that a possible solution of the problem over land may lie in the development of aërial locomotion. However much money we may invest in the construction of huge aërial machines carrying many passengers, we don't have to build a road.

* * *



Photograph by Harry F. Blanchard

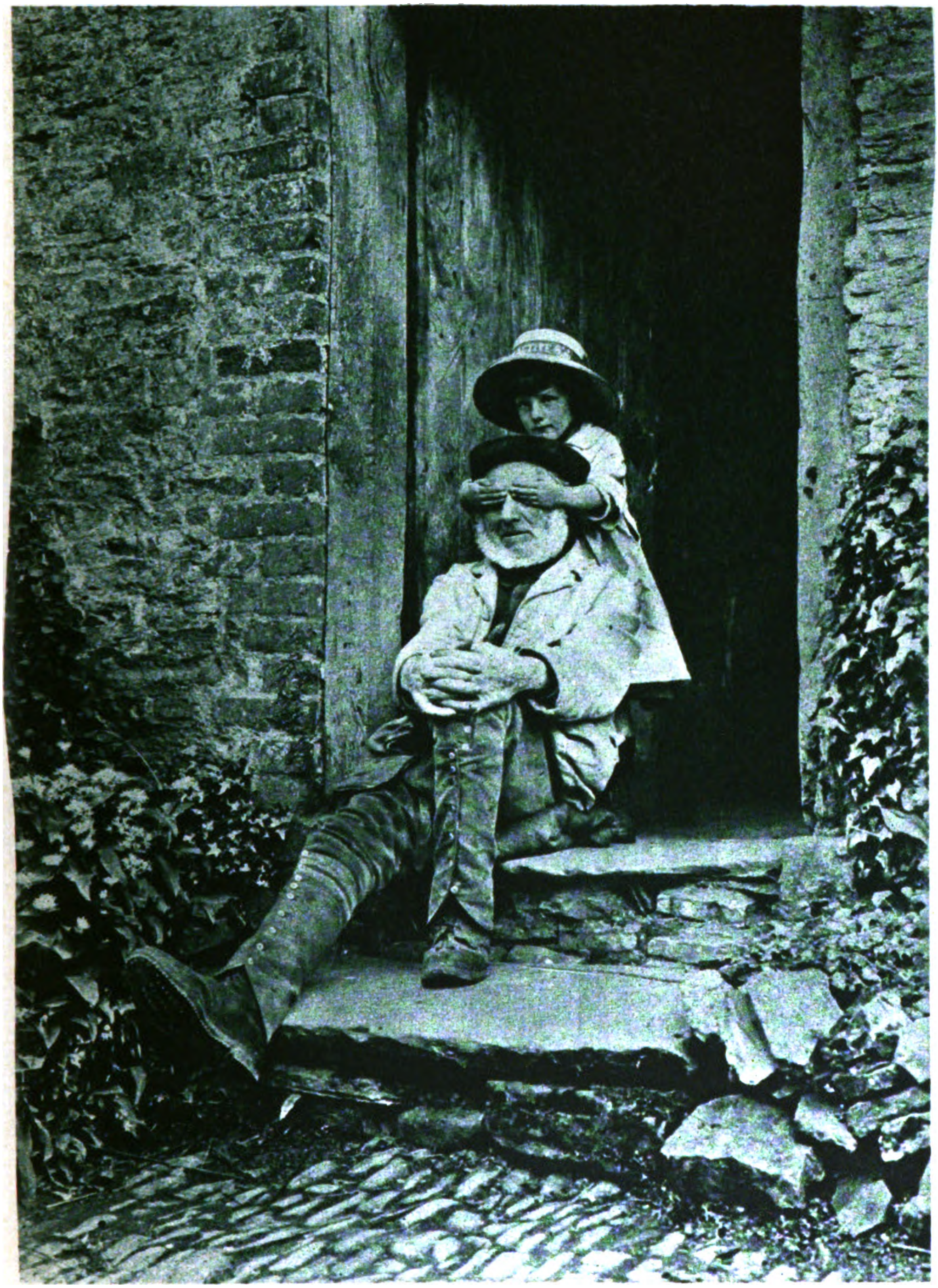
THE APPLE OF DISCORD

Nature's gift to the world's small boy is an appetite all out of proportion to his capacity. This "future president" evidently has repaired to the apple cellar and made inroads upon the winter's supply of pippins. From the expression on his face, preliminary pangs in the region of his waistband are inducing solemn reflection upon the enormity of his offense.

Photograph by Hugo Brehme

A "CHILD OF SORROW AND WOE": MEXICO

Without a square meal, a soft bed or a clean suit, what wonder that the bright sun of the Mexican highlands and the multi-hued birds and flowers cannot dispel the darkness of distress, or drive out the woe-begone look from the peon child's eye?



Photograph by A. W. Cutler

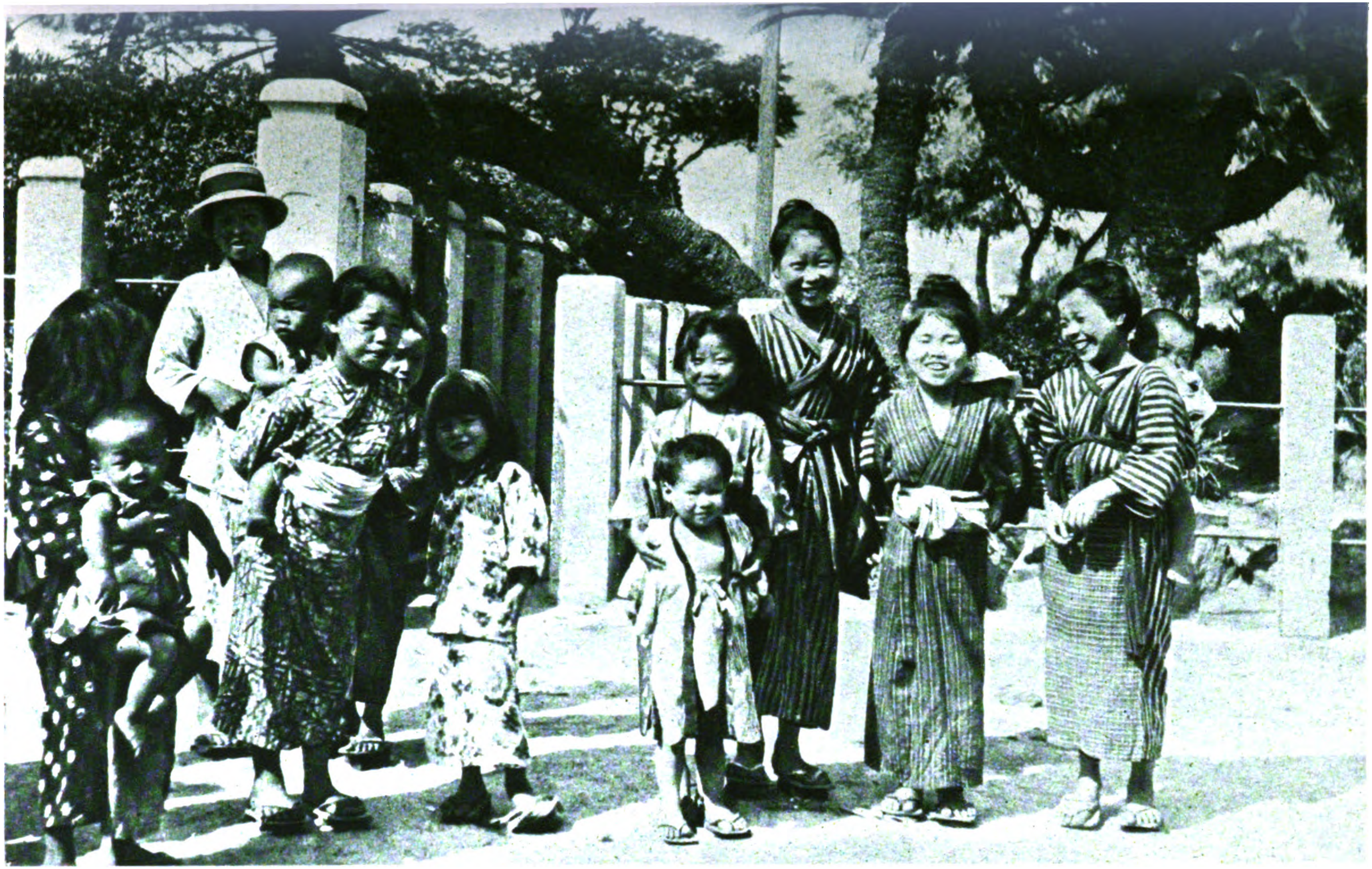
OF COURSE GRANDPA DOESN'T KNOW WHO

The old-fashioned game of "Guess Who" is as universal as childhood itself. This typical old English farmer was probably thinking about cutting his clover on the morrow, when a pair of little hands were clapped over his eyes and a well-known little voice piped, "Who is it, granddad?"

ART IN SWEDEN

The little Swedish lady who is posing for this budding portrait painter seems not quite pleased with the artist's work, judging from the expression on her face, while he, in his best professional manner, has just assured her that she will be very well satisfied with the finished picture. Children in Sweden are like children anywhere, and playtime in Scandinavia is very much like playtime anywhere else.

Photograph by G. Heurlin



Photograph by W. F. Robertson

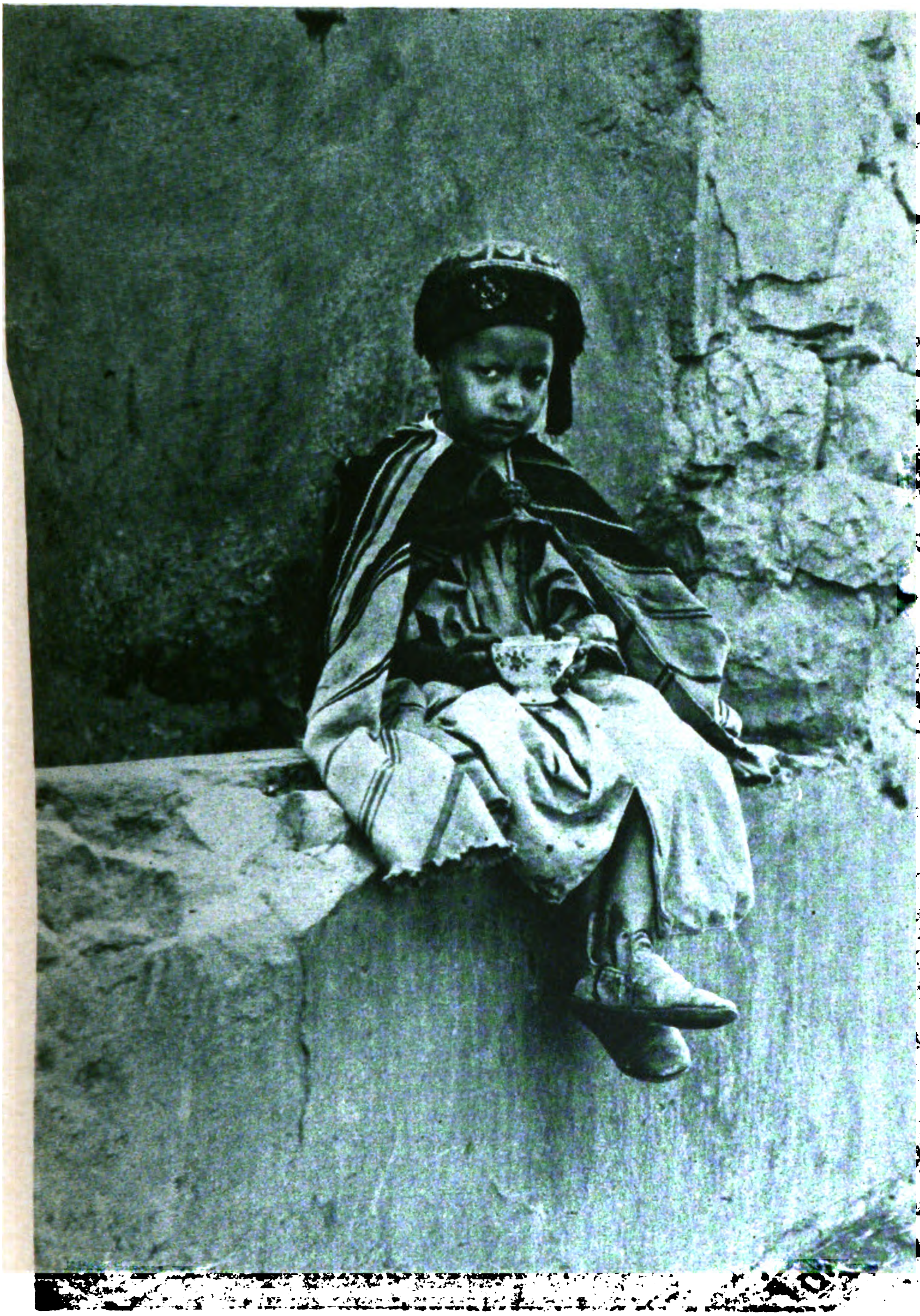
“LITTLE MOTHERS” OF NIPPON

One impression which the traveler to far Japan always carries away is that of the devotion shown by every little girl carrying a baby on her back. The camera caught this group of “little mothers” in the temple gardens at Kobe, a favorite play-spot for the children of the vicinity.

Copyright by Donald Mac Leish

THE LIGHT AND SHADE OF THE DESERT: BISKRA, ALGERIA

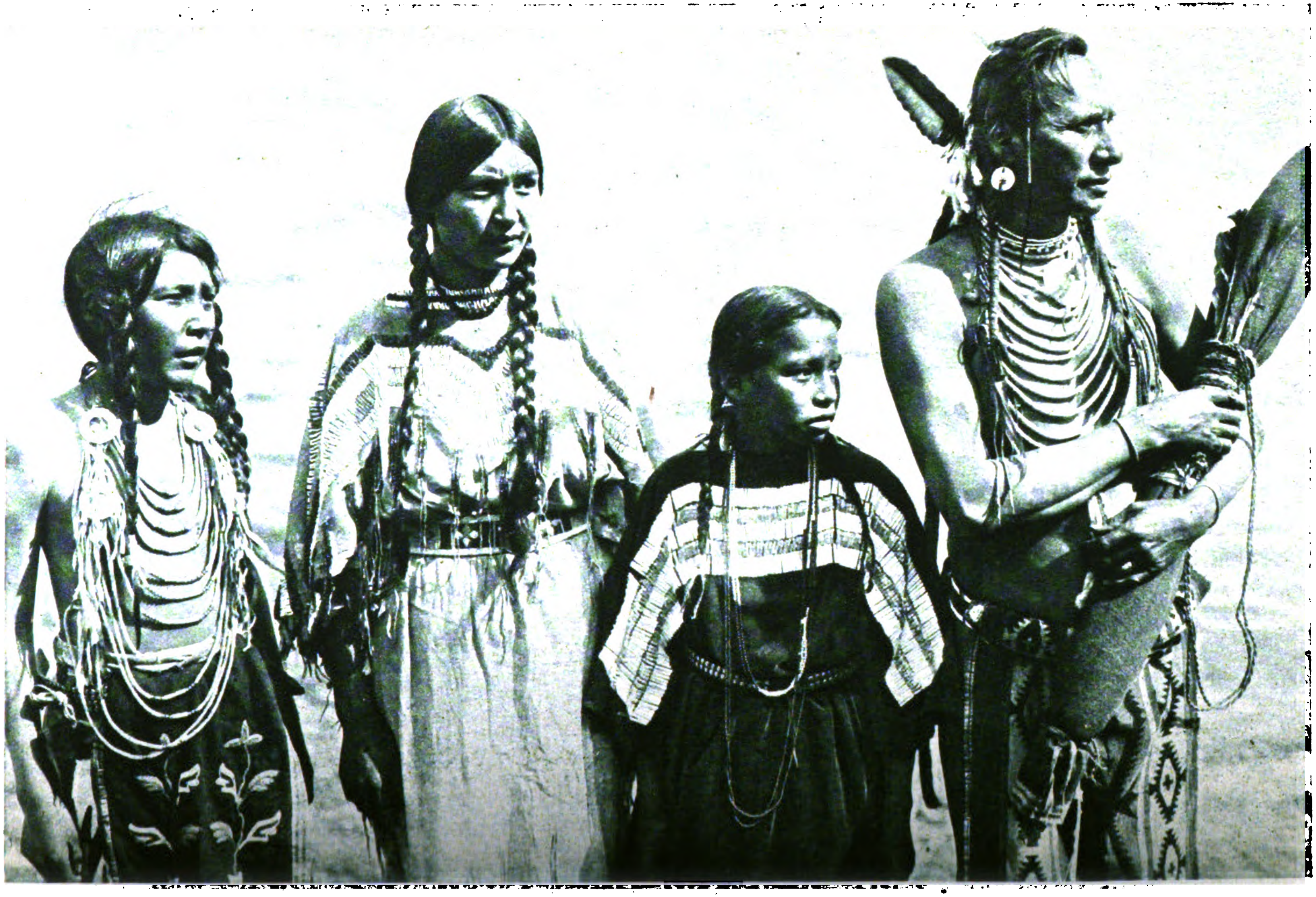
Every day like the preceding one, every year a duplicate of the one that went before, every century no different from the one it succeeded; the world may move elsewhere, but who can say that it moves in Biskra?



Copyright by Donald Mac Leish

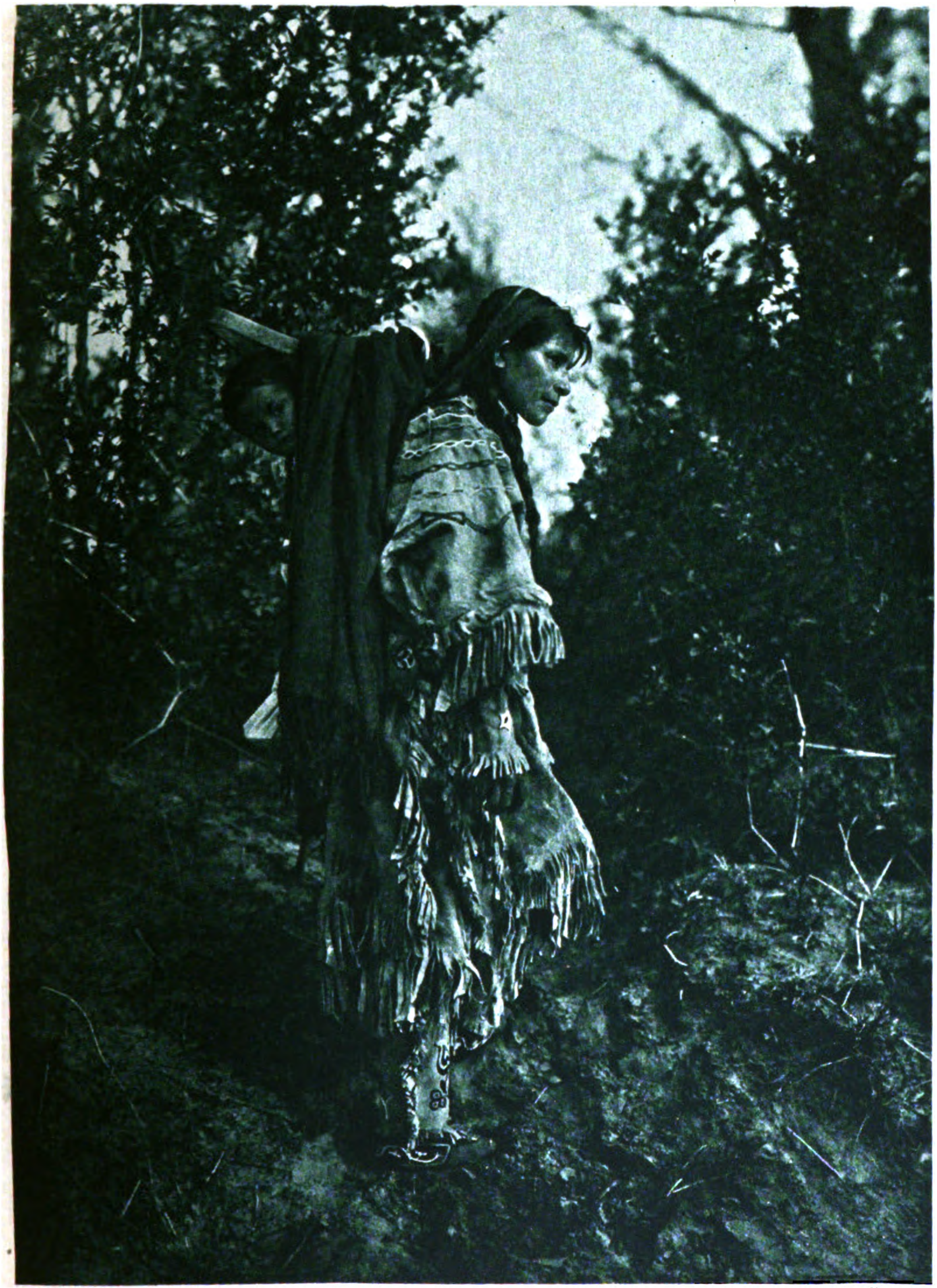
A SAHARA JACK HORNER

When told that his picture was to visit the six hundred thousand homes of the American boys and girls who love the Geographic, he tried to look as dignified as a judge, as wise as a lawgiver, and as solemn as a priest. And somehow he seems to have succeeded.



IN FULL HOLIDAY REGALIA

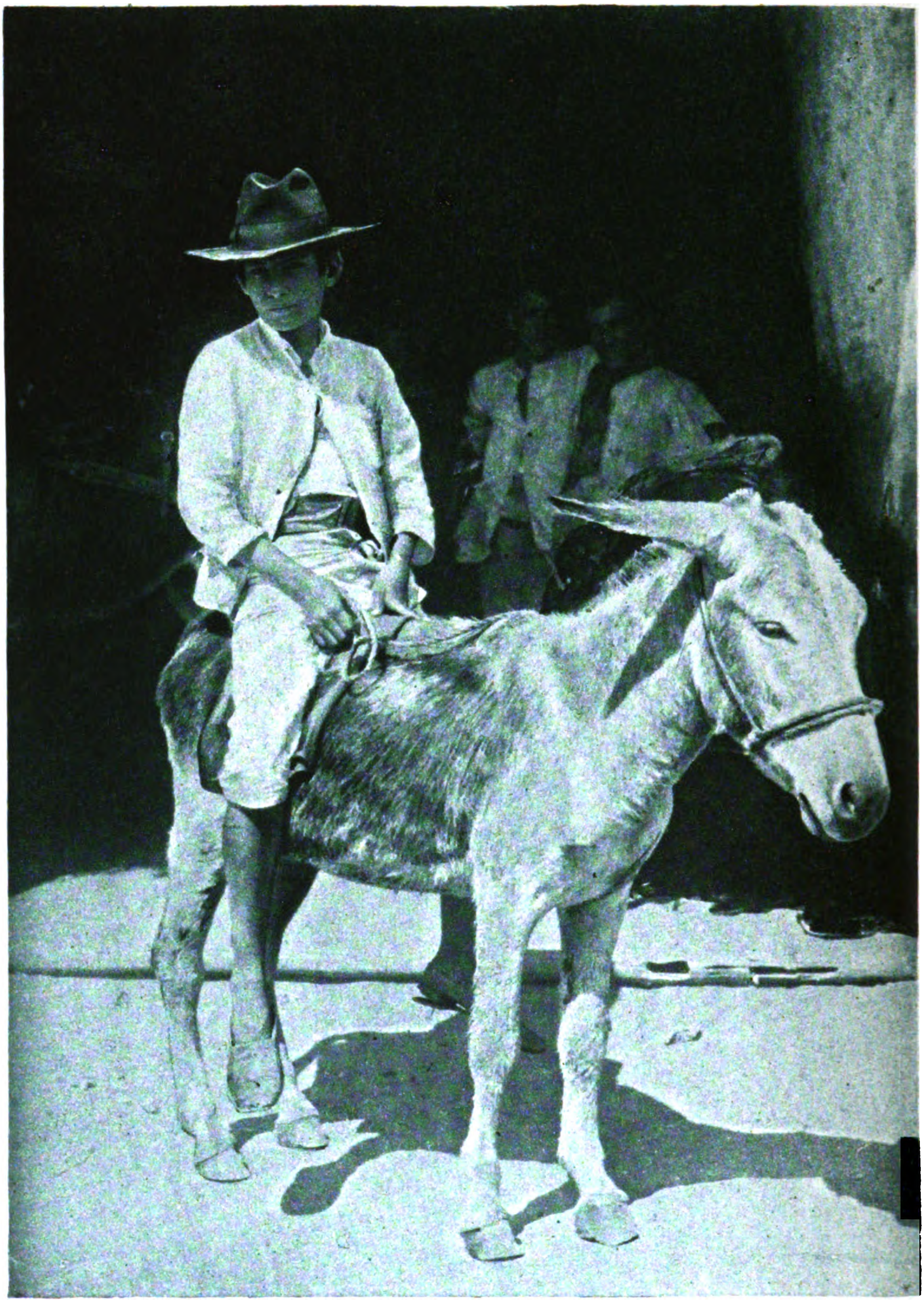
'Way up in the corner of Montana, adjacent to Glacier National Park, is the Blackfeet Indian reservation, where this once powerful tribe now lives. Many little ones play games originated in the dim, distant past, on the rolling prairie under the shadow of the whitecapped Rockies, but nowadays they usually are dressed in nondescript garments more like the white man's attire than the Indian's. Holidays are the exception, however, and every little Blackfeet has a gorgeous beaded costume for these occasions, when the customs of their forefathers are the order of the day.



Copyright by Roland W. Reed

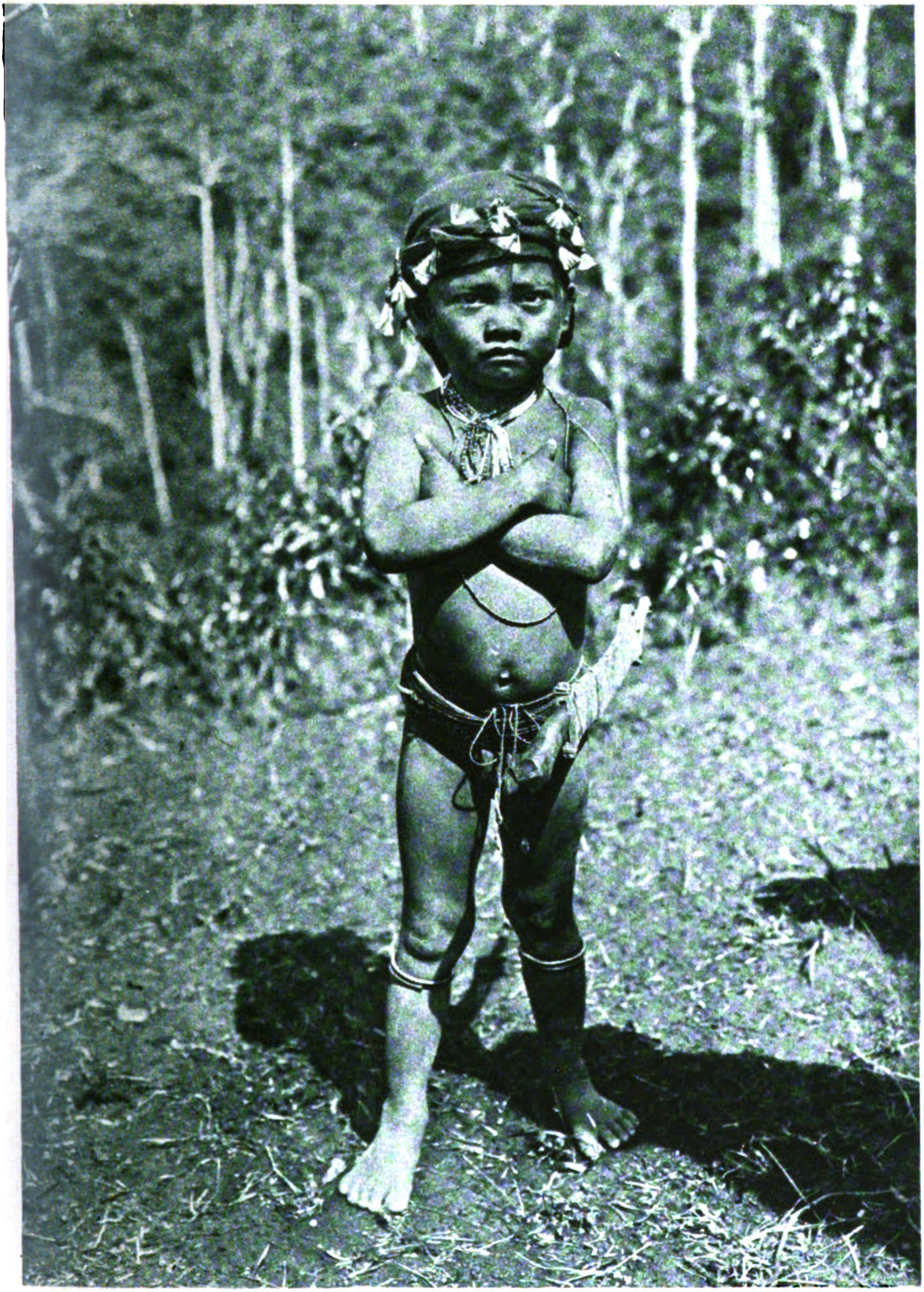
LITTLE CHIEF PACK-A-BACK GRAVELY INSPECTS THE CAMERA

This little scion of the Ojibway tribe, who lives up in northern Minnesota, will some day be a "big chief" of his people, but now he is only a small papoose who travels on his mother's back. In his restricted position, tightly wrapped to prevent his squirming out, he can move only his head and crane his neck to see the strange "paleface" with a queer black box on three legs—the camera which takes his picture.



"WELL BACK" IN SOUTH AMERICA

The young Venezuelan astride the hind quarters of his patient palfrey guides his mount with one rein of rope. The sleepy appearance of the charger indicates that not much restraint is necessary and suggests that in order to be guided he must first be started.



Photograph by Charles Martin

LOOK OUT, OR OFF GOES YOUR HEAD!

This youthful headhunter of the Philippine Islands is a son of a chief of the warlike Ilongote tribe, and he lives in the mountains of northern Luzon. The greater part of his costume is worn upon his head, and the little ornaments that look like trout flies are really tassels of white horsehair, highly prized by these people. Indeed, strands of horsehair are often more desirable than money in these mountain fastnesses, and burden carriers who have earned a dollar by swinging along difficult trails under a load of eighty pounds for three days have been known to refuse coins in favor of horsehairs.

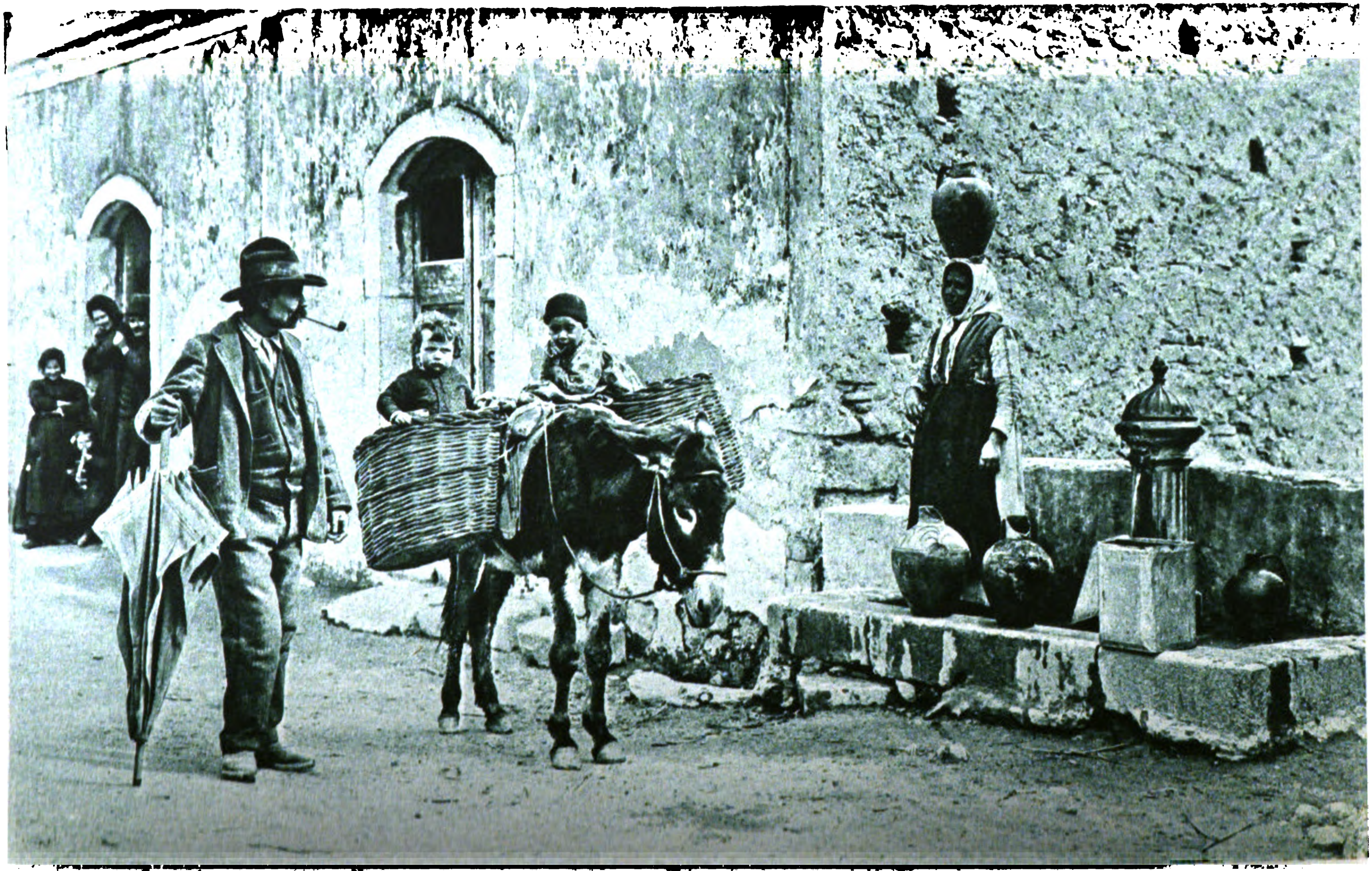
[illegible]

HAY FOOT, STRAW FOOT—!

"With a one, two and a three, four, we'll all fall in line," and even "Pinkie" the goat, obeys marching orders, reluctantly straggling along behind. Little girls in bloomers—just plain Americans with no strange customs.

Photograph by Charles Marsh

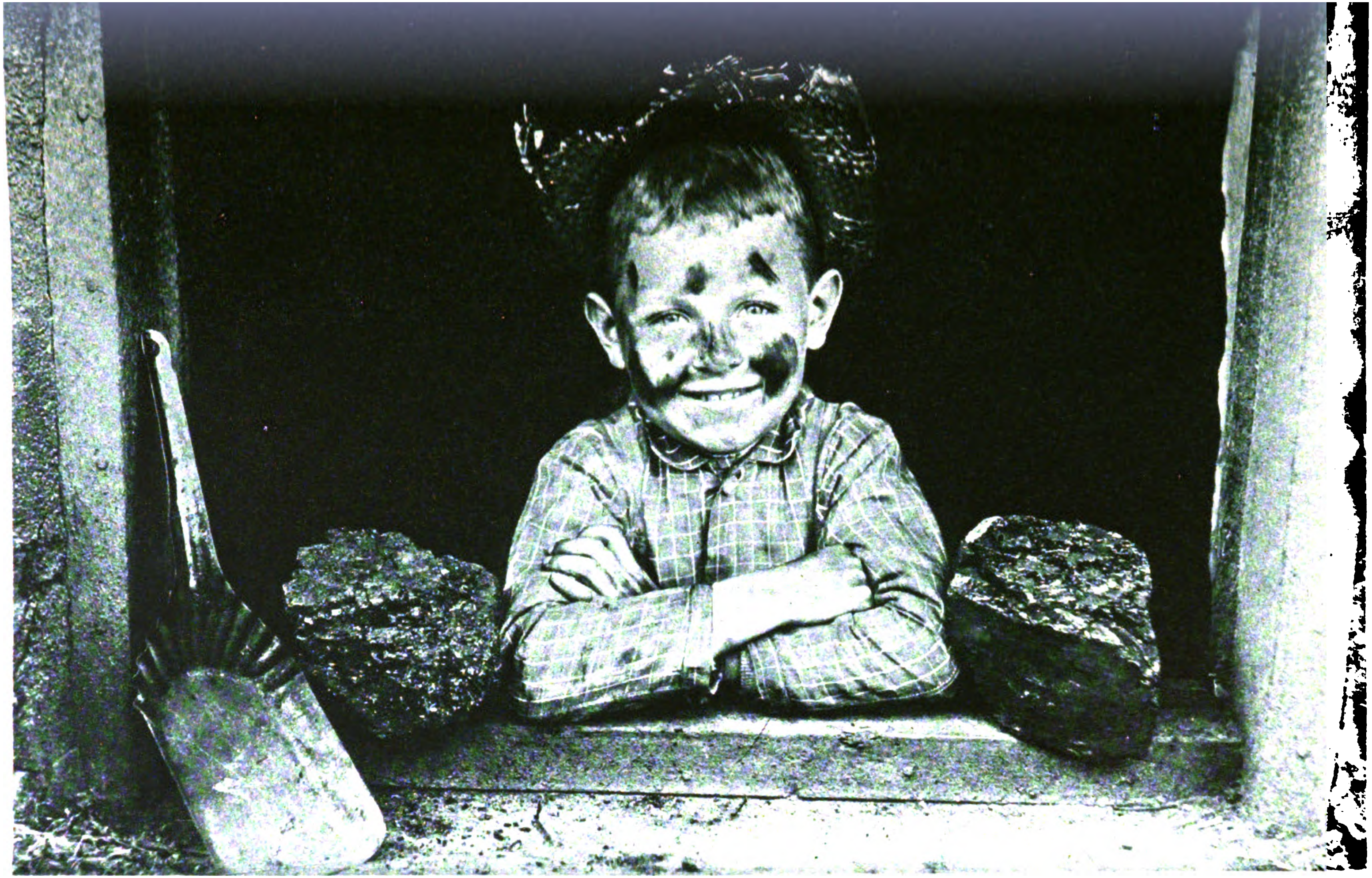
A ROMP WITH JOLLYBOY



Photograph by A. W. Cutler

A "DONKEYMOBILE" IN SUNNY SICILY

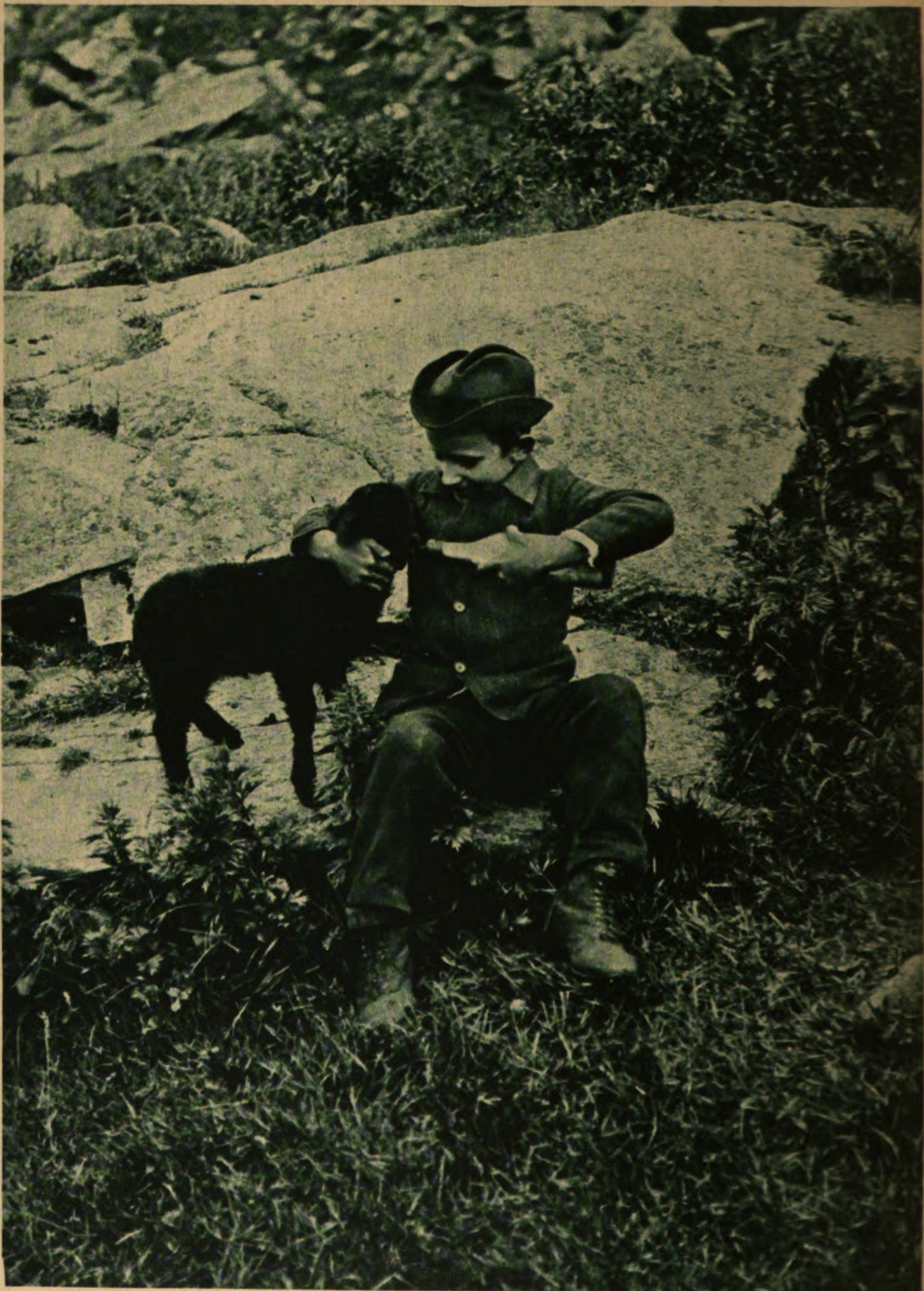
"Call not that man wretched who, whatever ills he suffers, has a child to love."—*Southey*



Photograph by Harry F. Blanchard

A NATIVE SON OF PENNSYLVANIA

The small boy's preference for a dirty face is well known the world over, but this young coal-miner is exceptionally fortunate in being surrounded with untold quantities of very effective "clean" dirt. The youngster above seems decidedly in his element and supremely happy, apparently with no fears for the future when his "ma" captures him.



Photograph by Donald Mac Leish

"FEEDING THE MOTHERLESS LAMB"

This little Austrian boy, who lives far up in the Tyrolean Alps, has his cosset in fond embrace. It looks like "forcible feeding," but perhaps the supply of milk is to be conserved for another meal and there is difficulty in retrieving the bottle.

BOHEMIA AND THE CZECHS

By Aleš Hrdlička

Curator of Physical Anthropology in the U. S. National Museum

IN THEIR memorable answer to the President of the United States on the conditions under which they would conclude peace with Germany, the Allies announced, as one of these conditions, the liberation of the Czecho-Slovaks from Austria-Hungary.

This introduces on the international forum a most interesting new factor, of which relatively little has been heard during the war and which in consequence has largely escaped, in this country at least, the attention which it deserves.

The same natural law of preservation that rules over individuals rules also over nations—only the strongest survive the struggle for existence. Not the strongest in numbers, nor even physically, but the richest in that healthy virginal life-current which suffers under defeat, but is never crushed; which may be suppressed to the limit, yet wells up again stronger and fresher than ever, the moment the pressure relaxes.

One such nation is surely, it seems, that of the Czechs or Bohemians. A 1,500-year-long life-and-death struggle with the race who surround it from the north, west, and south, with a near-burial within the Austrian Empire for the last three centuries, have failed to destroy the little nation or break its spirit.

As President Wilson has said: "At least two among these many races [of Austria], moreover, are strenuously, restlessly, persistently devoted to independence. No lapse of time, no defeat of hopes, seems sufficient to reconcile the Czechs of Bohemia to incorporation with Austria. Pride of race and the memories of a notable and distinguished history keep them always at odds with the Germans within their gates and with the government set over their heads. They desire at least the same degree of autonomy that has been granted to Hungary." *

The Czechs are now more numerous, more accomplished, more patriotic than ever before, and the day is inevitably approaching when the shackles will fall and the nation take its place again at the council of free nations.

WHO ARE THE BOHEMIANS

The Czechs* are the westernmost branch of the Slavs, their name being derived, according to tradition, from that of a noted ancestral chief. The term Bohemia was applied to the country probably during the Roman times and was derived, like that of Bavaria, from the Boii, who for some time before the Christian era occupied or claimed parts of these regions.

Nature has favored Bohemia perhaps more than any other part of Europe. Its soil is so fertile and climate so favorable that more than half of the country is cultivated and produces richly. In its mountains almost every useful metal and mineral, except salt, is to be found. It is the geographical center of the European continent, equally distant from the Baltic, Adriatic, and North seas, and, though inclosed by mountains, is so easily accessible, because of the valleys of the Danube and the Elbe rivers, that it served, since known in history as the avenue of many armies.

Beside Bohemia, the Czechs occupy Moravia and adjacent territory in Silesia. The Slovaks, who show merely dialectic differences from the Czechs, extend from Moravia eastward over most of northern Hungary.†

The advent of the Czechs is lost in antiquity; it is known, however, that they cremated their dead, and cremation burials in northeastern Bohemia and in Moravia antedate 500 B. C. Their invasions or spread southwestward, so far as re-

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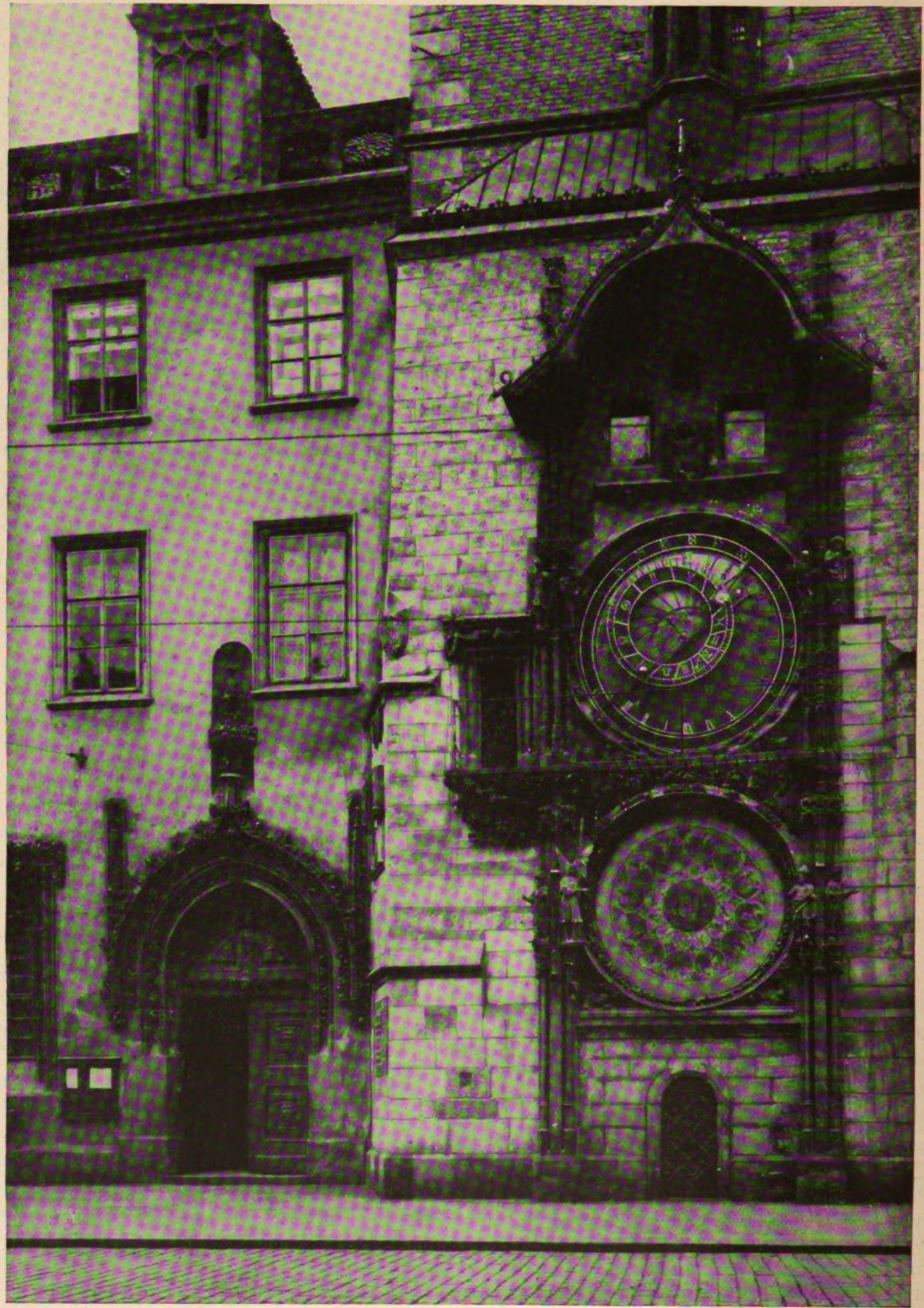
*The State, by Woodrow Wilson, revised edition, 1911, page 740.

*The Cz pronounced like ch in cherry.

† See "Map of Europe," published by the Geographic Magazine, August, 1915.



Photograph from Francis P. Marchant

THE FAMOUS ASTRONOMICAL CLOCK OF THE OLD TOWN HALL OF PRAGUE, DATING FROM 1490 A. D.

In front of the town hall, during the fierce reprisals of Ferdinand II, after the heroic efforts of the Bohemians had been foiled at the battle of White Mountain, forty-eight prominent nobles and citizens of Prague met torture and the block with great fortitude. The astronomical clock at the entrance, with figures of our Lord and the Apostles, is one of the oldest in Europe. Inside the building are the dungeons where the patriots were confined before execution.

corded in tradition or history, were of a peaceful nature, following the desolation and abandonment of the land through wars.

Like all people at a corresponding stage of development, they were subdivided into numerous tribes which settled different parts of the country, and the names of some of these clans, with remnants of dialectic, dress, and other characteristic differences, persist even to this day.

Their documentary history begins in the seventh century, at which time they already extend as far south as the Danube. They are agricultural and pastoral people. of patriarchal organization. Their government is almost republican, under a chief, elected by an assembly of representatives of the main classes of the people. Later this office develops into that of hereditary kings, whose assumption of the throne must nevertheless be in every instance ratified by the national diet. The nation possesses a code of formal supreme laws, and the people are noted for their physical prowess, free spirit, love of poetry, and passionate jealousy of independence.

CHRISTIANITY ACCEPTED

In the ninth century the pagan Czechs accept Christianity, with Slav liturgy, which becomes at once one of their most cherished endowments, as well as a source of much future hostility from Rome. The various tribes become united under the Premysl Dynasty, begun by the national heroine Libussa, with her plowman husband, and lasting in the male line until the first part of the fourteenth century.

Under their kings the Czechs reach an important position among the European nations. They rule, in turn, over large parts of what are now Austrian provinces, and briefly even over Hungary, Poland, and Galicia. But their fortune varies. From the time of Charlemagne they struggle, often for their very existence, with their neighbors, irritated by their presence, their racial diversity, and their riches.

The first recorded war with the Germans dates from 630, when the Frank Dagobert endeavors by force of arms to impose vassalage on the Czechs, but suffers defeat; and from this time on the Bohemian history is replete with records of fighting with the Germans. How the nation escaped annihilation must remain a marvel of history. It is sometimes reduced to almost a German vassal; yet it is never entirely overcome, and rises again and again to assert its individuality and independence.

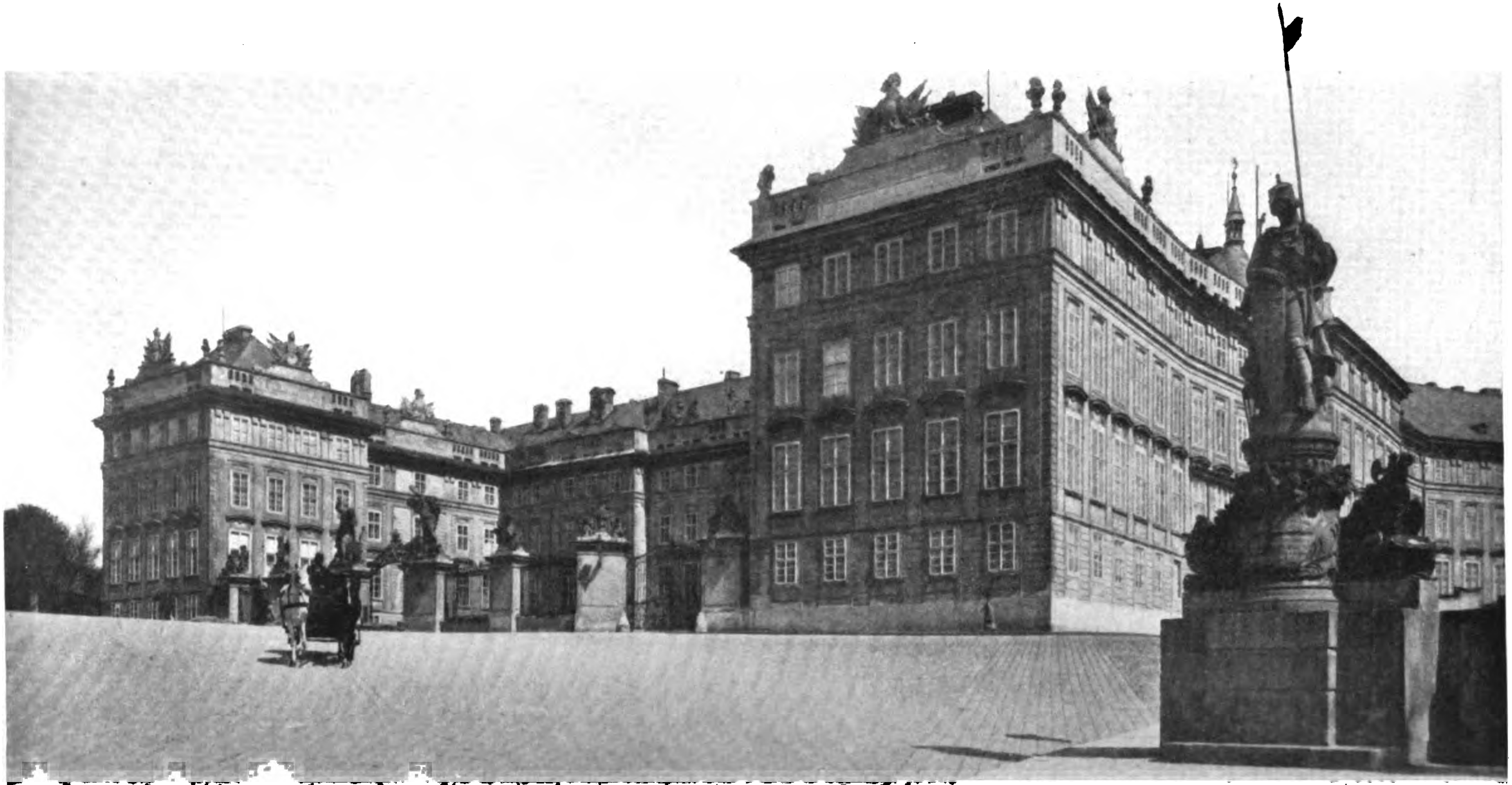
GERMANS COLONIZE BOHEMIA

Some of the Bohemian kings, under political and other influences, permit, and even invite, settlements of Germans on the outskirts of Bohemia. This is the origin of the German population of the country, which has played and still plays such a large part in its politics.

The latter part of the thirteenth century is a most critical period of Bohemia. Under Otakar II, one of its ablest kings, the country has reached the acme of its power. It extends from Saxony to the Adriatic, and Vienna is its second capital. Many of the German principalities are its allies and the king comes near to being called to head the Holy Empire.

But Rudolph of Habsburg is elected to this office, and from the moment of the advent of the house of Habsburg commence Bohemia's greatest misfortunes. The only offense of the Bohemian king is that he is Slav, but that, with the jealousy of his power, the democratic institutions, and the wealth of his country, which contains the richest mines of silver in Europe, is sufficient. Great armies, German and Hungarian, are raised against him; finally he is treacherously slain in battle, his kingdom torn apart, and Bohemia is ravished and reduced almost to a "possession" or a fief of the Empire.

Yet the wound is not mortal, the nation is too strong; it rises again, and within a few decades, under Otakar's son, regains its independence and much of its former power. In 1306, however, the last Bohemian king of the great Premysl family is slain by an assassin, and there begins a long period of dynastic difficulties, which become in time the main cause of Bohemia's downfall.



Photograph from R. D. Szalatnay

THE ROYAL PALACE OF HRADČANY, AT PRAGUE, BOHEMIA

On the 23d of May, 1618, the assembled nobles threw from the windows of the council room two of the councillors who were convicted of treason to the Bohemian cause. This was the initial act of those that led to The Thirty Years' War, which devastated Central Europe, 1618-1648, resulting in the death of millions and almost in the depopulation of Bohemia, Bavaria, Saxony, etc.

A GODSEND TO HIS COUNTRY

The next Bohemian ruler of some note is John of Luxembourg, married to Elizabeth, the last princess of the Premysl house, and killed, fighting for France, at the battle of Crecy, on the Somme (1346). The knightly John does little for Bohemia, but he gives it Karel (Charles IV), his and Elizabeth's son, who proved a god-send to the country.

In Bohemian history he is known as "the father of his country." Under his long, wholesome, patriotic, and peaceful reign (1347-1378) the whole nation revives and strengthens. Independence of the country, except for the honorable connection with the Roman Empire, is fully reëstablished. Education, art, and architecture thrive. The University of Prague is founded (1348) on the basis of the high seat of learning established a century before by Otakar. The medicinal waters of Karlovy Vary (Carlsbad) are discovered and the city of the same name rises on the site; and Prague, as well as other cities, are beautified.

Charles is elected Emperor of the Romans in 1348, and Bohemia stands "first in the world in power, wealth, progress, and liberty." The excellent relations of the country with England culminate in 1382 in the marriage of Richard II with Anne of Bohemia.

THE MARTYRDOM OF JOHN HUSS

But Charles is succeeded by a weak son, and it is not long before Bohemia suffers again from its old enemies.

A great national and religious leader arises in the person of John Huss. But Rome excommunicates John Huss and accuses him of heresy. He is called to report to the Council at Constance and leaves with a written guarantee of safe conduct from Sigismund, the king and emperor, which, however, proves a "scrap of paper." Huss is not permitted to adequately defend the truth, nor to return; he is thrown in prison; his teachings are condemned; and July 6, 1415, he is martyred by being burnt at the stake. The very ashes are ordered collected and cast into the Rhine, lest even they become dangerous.

The shock of the death of Huss and of his fellow-reformer, Jeronym, burnt a little later, fire Bohemia with religious and patriotic zeal and lead to one of the most wonderful chapters in its and the world's history, the Hussite Wars. A military genius arises in Jan Zizka, and after him another in Prokop Holy; a new system of warfare is developed, including the use of some frightful weapons and of movable fortifications formed of armored cars; and for fifteen years wave after wave of armies and crusaders from all Europe, operating under the direction of Rome, Germany, Austria, and Hungary, are broken and destroyed, until religious and national freedom seem more secure.

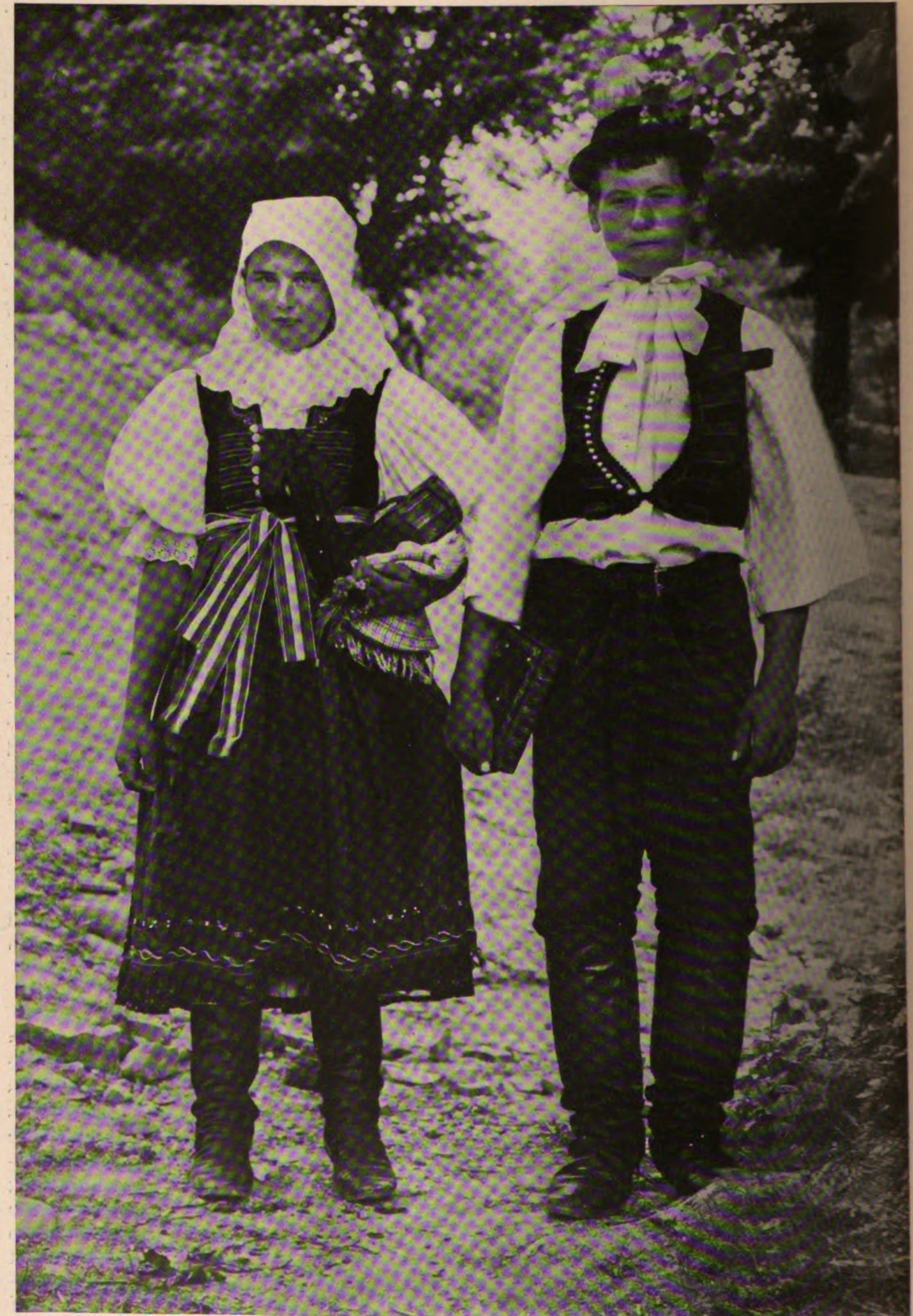
As an eventual result and after many serious internal difficulties of religious nature, another glorious period follows for Bohemia, both politically and culturally, under the king George Podiebrad (1458-1471). One of their enemies of this period, Pope Pius II (Æneas Sylvius) cannot help but say of them: "The Bohemians have in our times by themselves gained more victories than many other nations have been able to win in all their history." And their many other enemies find but little more against them.

No Inquisition, no evil of humanity, has ever originated in Bohemia. The utmost reproach they receive, outside of the honorable "heretic," is "the hard heads" and "peasants." Few nations can boast of as clean a record.

BOHEMIA'S FATEFUL HOUR

The fateful period for Bohemia comes in the sixteenth century. The people are weakened by wars, by internal religious strifes. A fearful new danger threatens central Europe—the Turks. In 1526 the Bohemian king, Ludvik, is killed in a battle with the Turks, assisting Hungary; and as there is no male descendant, the elective diet at Prague is influenced to offer the crown of Bohemia, under strict guarantees of all its rights, to the husband of Ludvik's daughter, Ferdinand of Habsburg, archduke of Austria.

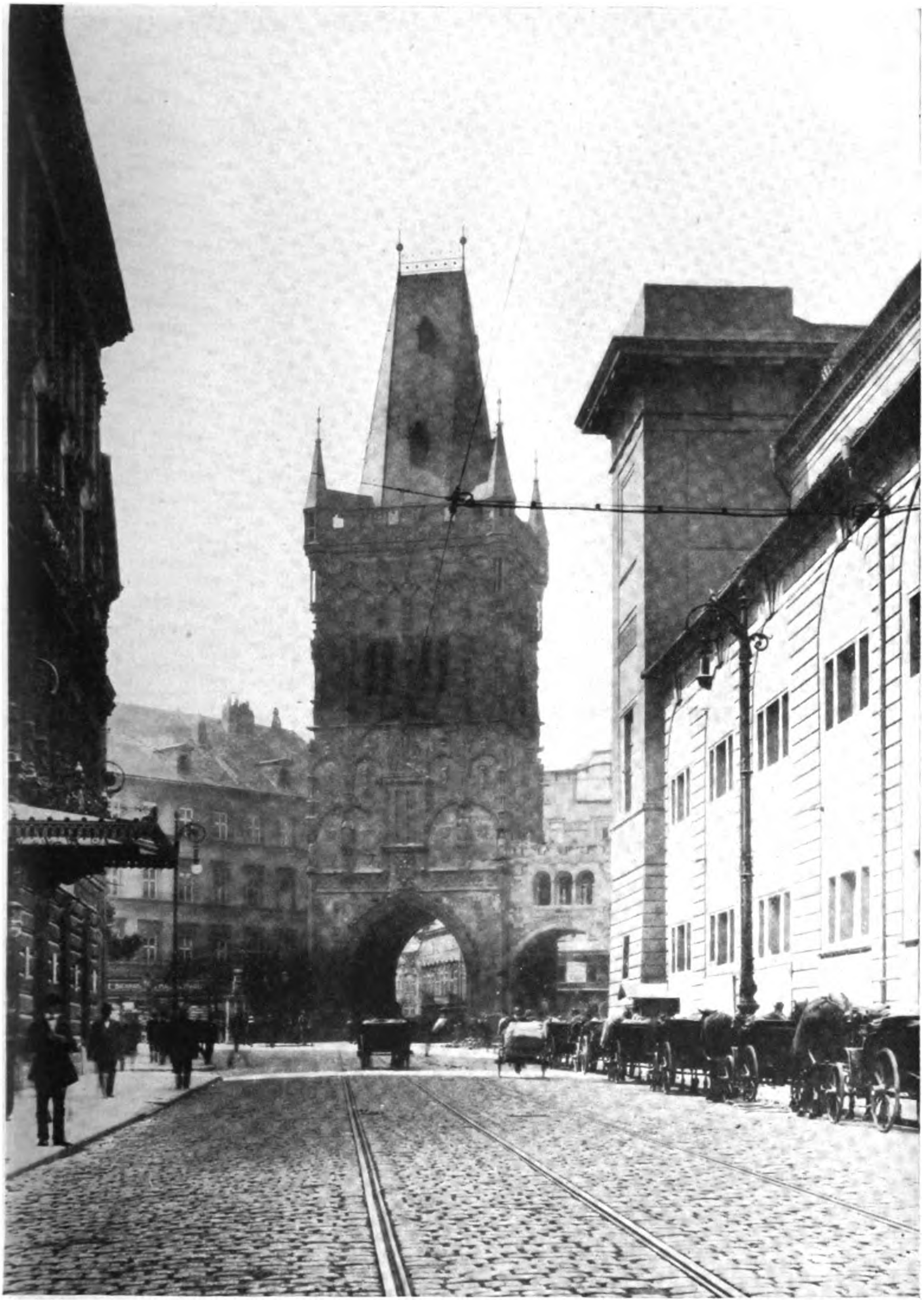
Hungary, too, joins the union, and the beginning of the eventual empire of



Photograph by Erdelyi

A SLOVAK BRIDE AND GROOM

Some peasant women wear huge boots like the Wellington pattern, doubtless comfortable and protective against weather, but lacking in the grace traditionally expected in feminine footgear.



Photograph by Edgar K. Frank

POWDER TOWER, AT PRAGUE, BOHEMIA

There was a time when Shakespeare's shipwreck on the shores of Bohemia, described in "Winter's Tale," was a possibility, as the dominions of King Premysl Ottokar were washed by the Baltic and the Adriatic seas. A stone thrown at Prague, it has often been said, carries a fragment of history (see page 165).

Photograph by D. W. Iddings, Keystone View Co.

GENERAL VIEW OF PRAGUE FROM THE PETRIN HILL

Austria has been effected. Continuous wars with the Turks and a terrible plague further weaken the Czechs.

Ferdinand proves a scourge. Religious persecution and then general oppression of Bohemia follow. The freely chosen king becomes tyrant and before long the greatest enemy of Bohemia. Backed by the rest of his dominion, by Rome and Spain, he tramples over the privileges of Bohemia; depletes its man-power as well as treasury; by subterfuge or treachery occupies Prague and other cities, and follows with bloody reprisals and confiscations, which lead to an era of ruthlessness and suffering such as the country has not experienced in its history. The weakened state of the country allows of no effective protest, and of its former allies or friends none are strong enough to offer effective help.

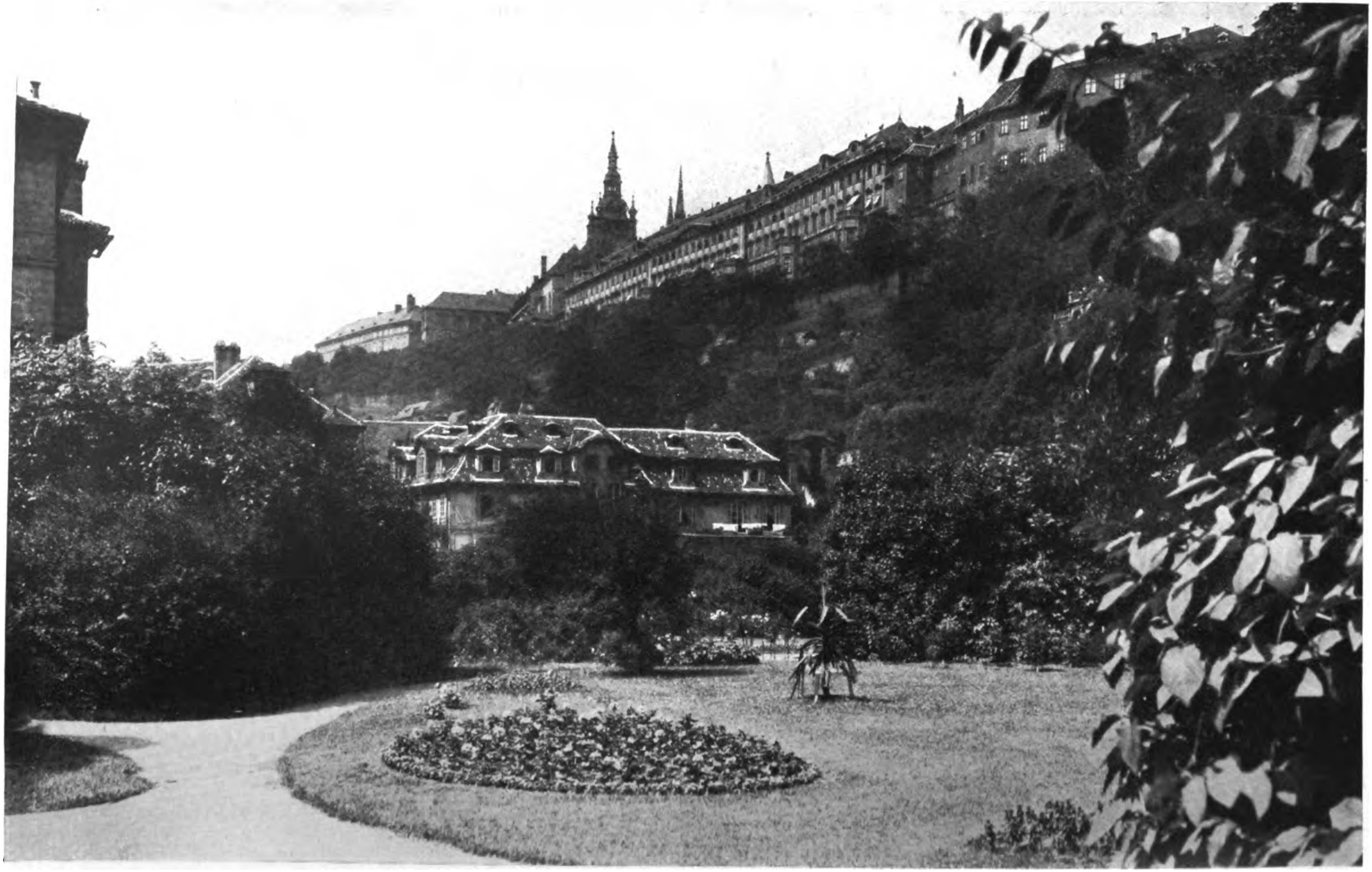
THE TYRANNY OF FERDINAND

Yet even worse was to come from the Habsburgs, the association with whom for Bohemia was from the beginning of the greatest misfortune. During the reign of Ferdinand's immediate successors there is a breathing spell for the Czechs; but in 1616 another Habsburg, Ferdinand II, again under force of circumstances, is elected king of Bohemia, only to prove its greatest tyrant. Within two years the Bohemians are in open revolt, and in another year the king is deposed.

Photograph from R. D. Szalatnay

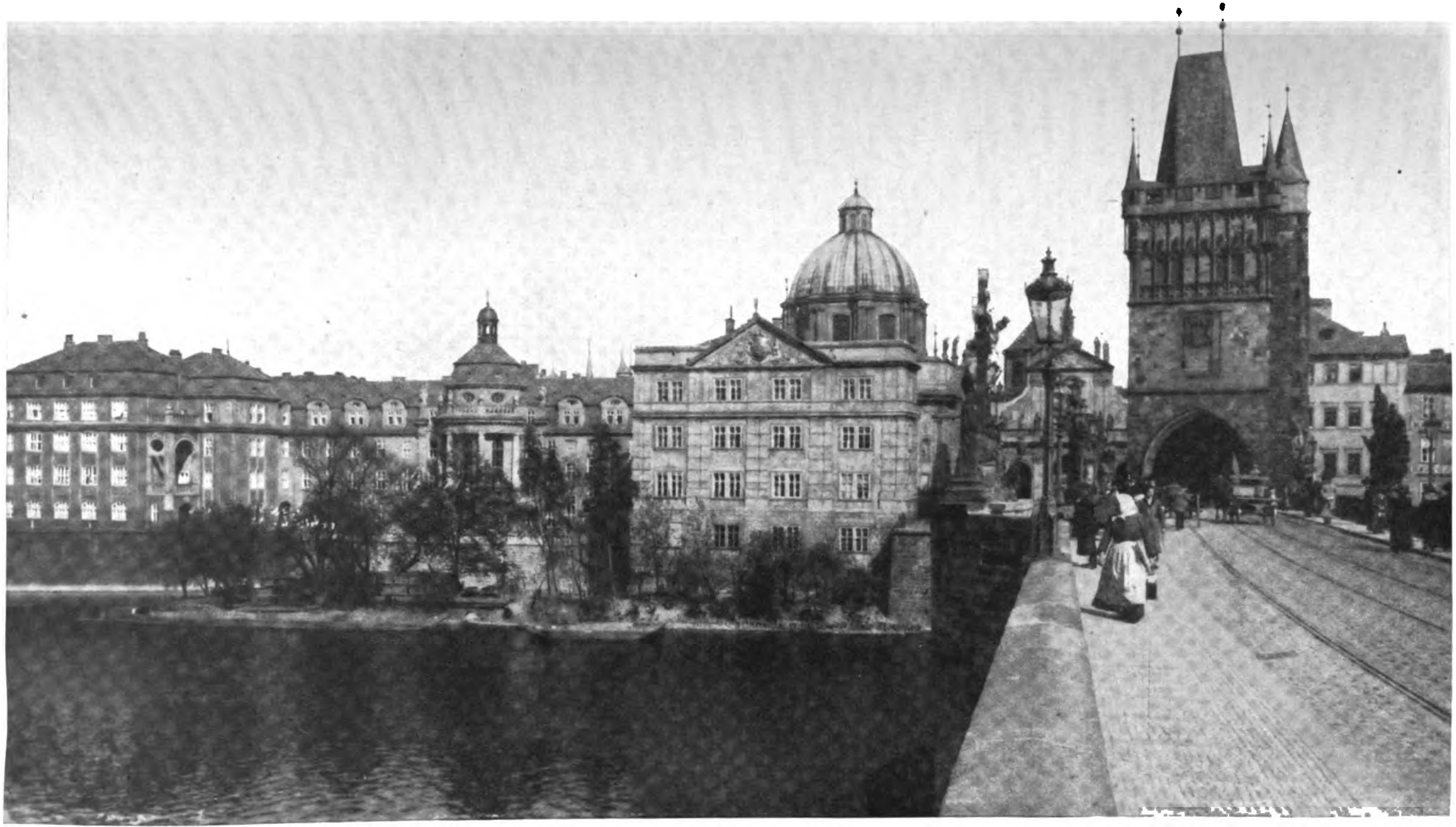
A BOHEMIAN PEASANT GIRL WORKING ON A PIECE OF EMBROIDERY

Many of the Czech as well as Slovak embroideries are ethnological documents as well as most interesting works of art



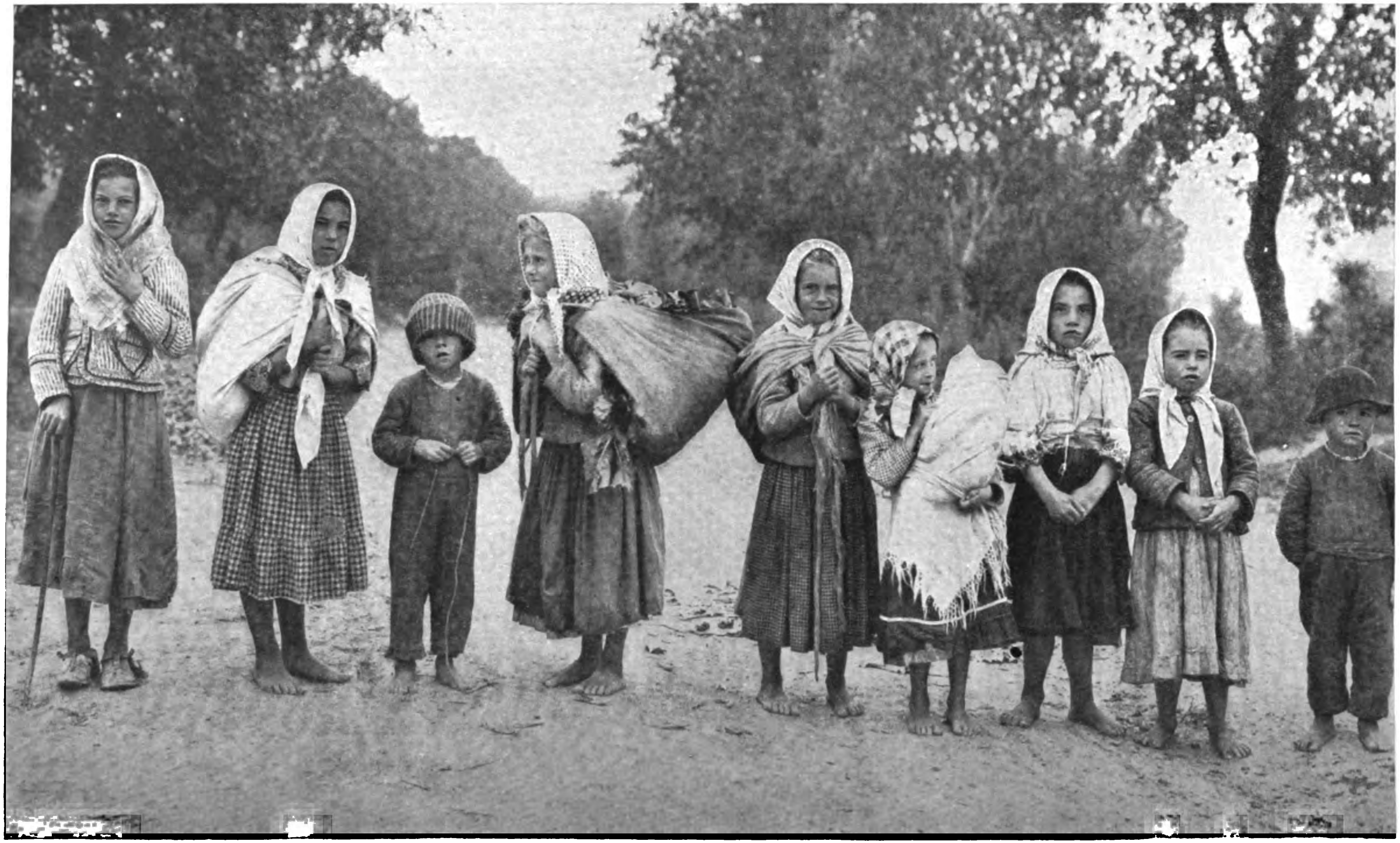
Photograph from Francis P. Marchant

PRAGUE, THE "ROSE OF EUROPE," A CITY OF GARDENS: ONE OF THE PALACE GARDENS ON THE HRADČANY



Photograph from R. D. Szalatnay

A BRIDGE TOWER IN THE OLD PART OF PRAGUE: THE OLD AND THE MOST MODERN, EACH BEAUTIFUL IN ITS WAY, MEET IN THE OLDER PARTS OF PRAGUE AT EVERY STEP



Photograph by A. W. Cutler

GROUP OF CZECH CHILDREN OF THE POOREST CLASSES: THE LITTLE GIRLS CHEERFULLY HELP THEIR MOTHERS, CARRYING HOME FODDER FOR THE CATTLE AND DOING CHORES

The stranger elected in his place, Frederick of the Palatinate, son-in-law of the King of England, however, proves an incompetent weakling. The Czech armies are disorganized, and November 8, 1620, the main force of 20,000 is defeated at Bila Hora, near Prague, by an army of Germans, Spaniards, Walloons, Poles, Cossacks, and Bavarians.

The following part of the Bohemian history should be read in detail by all its friends—by all friends of humanity. It is a most instructive, though most gruesome, part of the history, not merely of Bohemia, but of Europe, of civilization. In Bohemia itself it is a period of concentrated fiendishness under the banner of religion, and of suffering, of thirty years duration. Beginning with wholesale executions, it progresses to the forced exile of over 30,000 of the best families of the country, with confiscation of their property, and to orgies of destruction of property and life.

Under the leadership of fanatics, every house, every nook, is searched for books and writings, and these are burned in the public squares "to eradicate the devil" of reformation. Rapine reigns, until there is nothing more to burn, nothing to take, and until three-quarters of the population have gone or perished—a dreary monument to the Habsburg dynasty, to the status of mankind in the 17th century.

Had not Germany itself been ravaged by the religious wars thus kindled, this period would probably have been the last of the Czechs; as it was, there were not enough Germans left for colonizing other countries. Yet many came in the course of time, as settlers. German becomes the language of commerce, of courts, of all public transactions; the university is German, and in schools the native tongue finds barely space in the lowest grades.

Books have been burnt, educated patriotic men and women driven from the country, memories perverted. It would surely seem that the light of the nation would now, if ever, become extinct. And it becomes obscured for generations—yet is not extinguished. The roots of the stock prove too strong and healthy.

The people sleep for 150 years, but it is a sleep of rest, not death—a sleep healing wounds and allowing of a slow gathering of new forces.

BOHEMIA REAWAKENED

Toward the end of the eighteenth century the Czech language is almost wholly that of the untutored peasant. But the time of quickening approaches. First one cell, one nerve, one limb of the prostrate body revives; then others. The history of the nation is resurrected and proves an elixir of life; to learn it is to a Czech enough for a complete awakening. But the awakening period becomes one of constant struggle against all the old forces that would keep him down; yet step by step he advances, over prisons and gallows.

Literature, science, art arise again; journalism begins to develop. The university is regained; Prague, the "mother" of Bohemian cities, is regained, and others follow. Education reaches a higher level ultimately than anywhere else in Austria. A great national society of Sokols ("falcons") is formed to elevate the people physically, intellectually, and morally.

Bohemian literature, music, art, science come against all obstacles to occupy again an honorable position among those of other nations.

Agricultural and technical training progresses until the country is once more the richest part of the empire. Finally journalism has developed until, just before the war, there are hundreds of Czech periodicals. The Czech language is again heard in the courts, in high circles, in the Austrian Reichstag itself; and, though still crippled, there is again a Bohemian Diet.

Where after the Thirty Years' War there were but a few hundred thousands of Czechs left, there are now in Bohemia, Moravia, and Silesia alone seven millions; besides which there are over two million Slovaks in the adjacent area under Hungary.

Such is the very brief and imperfect abstract of the history of the Czech people, who see once more before them the dawn of liberty which they so long cherished.

WHAT HAVE THE BOHEMIANS ACCOMPLISHED AS A NATIONALITY?

It may be well to quote on this subject a paragraph from an American author, Robert H. Vickers (History of Bohemia, 8°, Chicago, 1894, p. 319):* "The fixed rights, the firm institutions, and the unfailing gallantry of Bohemia during eight hundred years had constituted a strong barrier against the anarchy of the darkest ages. The manly independence and the solicitude for individual political rights always exhibited by the Bohemian people have rendered them the teachers of nations; and their principles and parliamentary constitution have gradually penetrated into every country under heaven.

"They protected and preserved the rights of men during long ages when those rights were elsewhere unknown or trampled down. Bohemia has been the birthplace and the shelter of the modern politics of freedom."

But Bohemia has also been for centuries the culture center of central Europe. Its university, founded in 1348, at once for the Czechs, Poles, and Germans, not only antedated all those in Germany and Austria, but up to the Hussite wars was, with that of Paris, the most important of the continent. In 1409, when the German contingent of the university, failing in its efforts at controlling the institution, left Prague to found a true German university at Leipzig, the estimates of the number of students, instructors, and attendants who departed average over 10,000.

WYCLIFFE ENCOURAGES THE CZECHS

Sigismund, the emperor and deposed king of Bohemia, in writing of it, in 1416, to the Council of Constance, says: "That splendid University of Prague was counted among the rarest jewels of our realm. . . . Into it flowed, from all parts of Germany, youths and men of mature years alike, through love of virtue and study, who, seeking the treasures of knowledge and philosophy, found them there in abundance."

Last, but not least, Bohemia led in the great struggle for freedom of thought, religious reformation. Encouraged by the writings of Wycliffe, in England, and by such meager sympathy from continental Europe as they could obtain in those dark times, the Czech puritans, regardless of the dire consequences which they knew must follow, rose in open, bold opposition to the intellectual slavery in which nearly the whole of Europe was then held. They paid for this with their blood, and almost with the existence of the nation; but Luther and a thousand other reformers arose in other lands to continue on the road of liberation.

For a small nation, not without the usual human faults, and distracted by unending struggles for its very existence, the above contributions to the world during the dark age of its rising civilization, would seem sufficient for an honorable place in history.

THE CHARACTERISTICS OF THE CZECHS

As to the modern achievements of the nation, they follow largely in the footsteps of the old. Notwithstanding the most bitter struggle for every right of their own, the Czechs have extended a helpful hand to all other branches of the Slavs, in whose intellectual advance and solidarity they see the best guarantee of a peaceful future. They have extended their great organization Sokol, which stands for national discipline, with physical and mental soundness, among all the Slavic nations, and they are sending freely their teachers over the Slav world, and this while still under the Habsburgs.

To attempt to define the characteristics of a whole people is a matter of difficulty and serious responsibility even for one descended from and well acquainted with that people. Moreover, under modern conditions of intercourse of men and nations, with the inevitable admixtures of blood, the characteristics of individual groups or strains of the race tend to become weaker and obscured.

Thus the Czech of today is not wholly the Czech of the fifteenth century, and to a casual observer may appear to differ but little from his neighbors. Yet he differs, and under modern polish and the more or less perceptible effects of cen-

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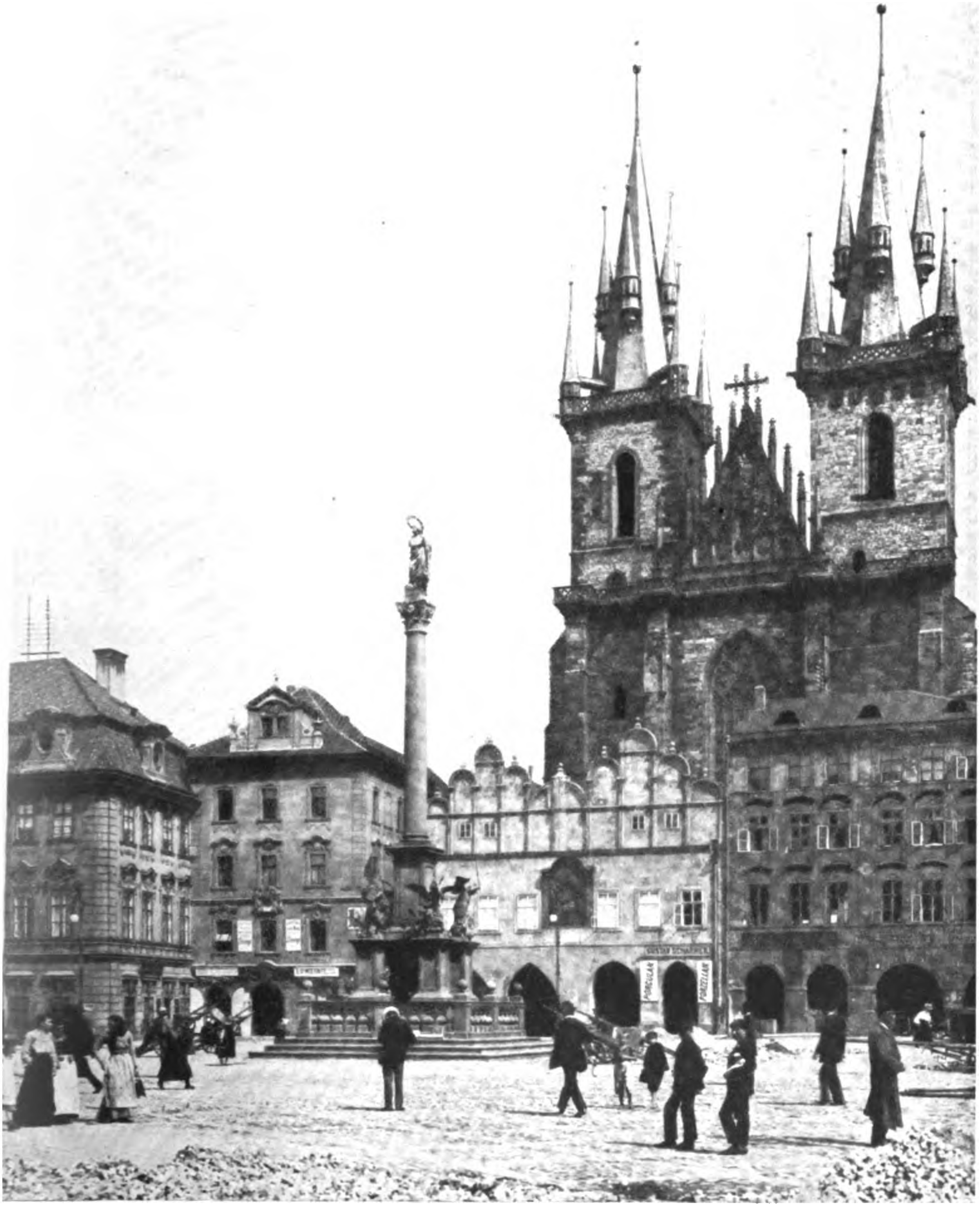
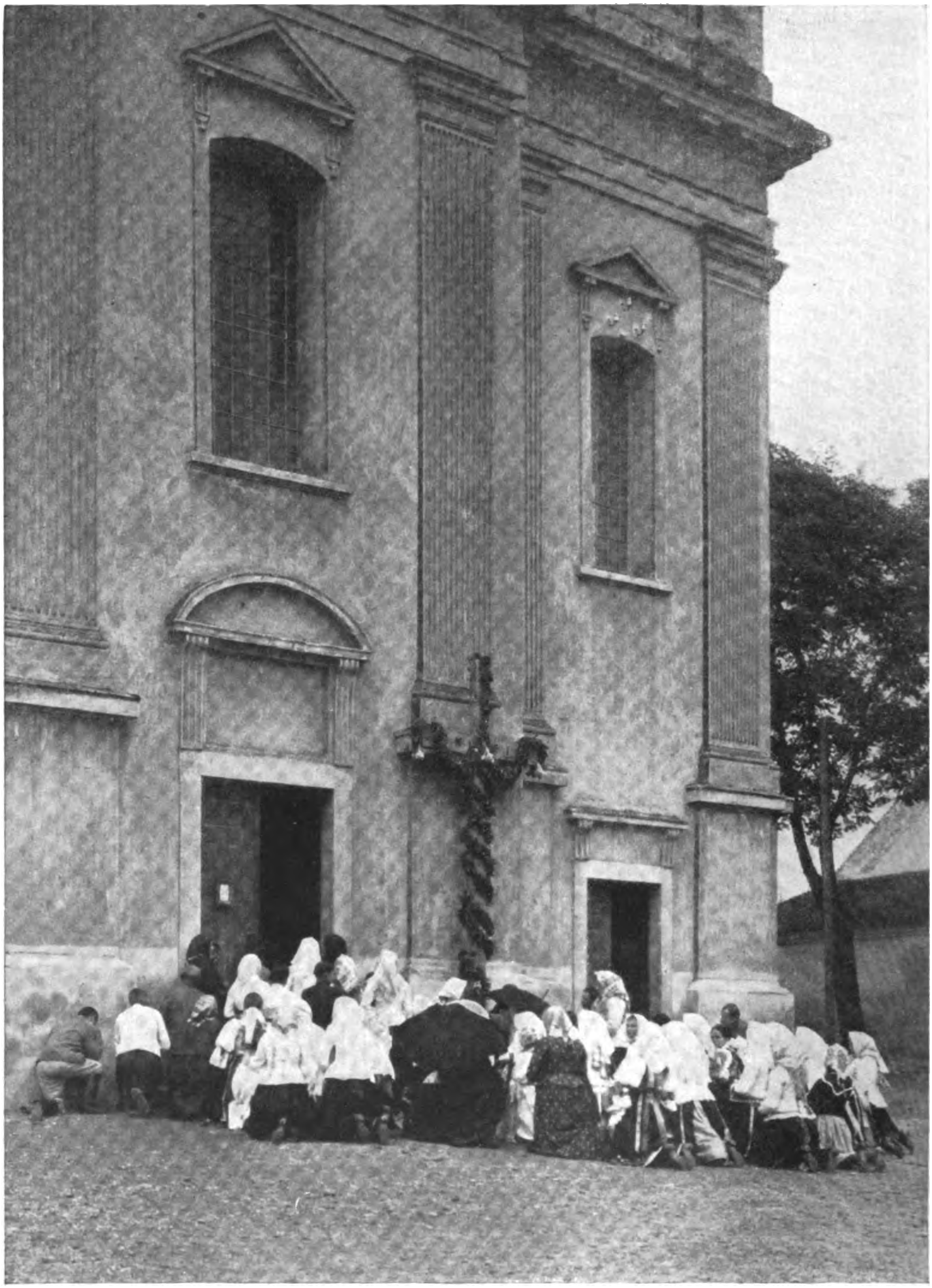
*See also W. S. Monroe, Bohemia and the Czechs, Boston, 1910.



Photograph from Francis P. Marchant

THE TÝN CHURCH OF PRAGUE (FORMERLY HUSSITE CHURCH)

Prague is also known as "the city of hundred towers (or steeples)"; but the towers are now lifeless; their great sonorous bells have been confiscated for Austrian cannon



Photograph by A. W. Cutler

SLOVAKS AT POSTYEN ATTENDING A CELEBRATION OF MASS ON SUNDAY MORNING

There being no room in the church, these devout people take part in the services outside; even when the ground is wet and muddy they kneel thereon turies of oppression, is still in a large measure the Czech of the old.

He is kind and with a stock of native humor. He is musical, loves songs, poetry, art, nature, fellowship, the other sex. He is an intent thinker and restless seeker of truth, of learning, but no apt schemer. He is ambitious, and covetous of freedom in the broadest sense, but tendencies to domineering, oppression, power by force over others, are foreign to his nature. He ardently searches for God and is inclined to be deeply religious, but is impatient of dogma, as of all other undue restraint.

He may be opinionated, stubborn, but is happy to accept facts and recognize true superiority. He is easily hurt and does not forget the injury; will fight, but is not lastingly revengeful or vicious. He is not cold, calculating, thin-lipped, nor again as inflammable as the Pole or the southern Slav, but is sympathetic and full of trust, and through this often open to imposition.

His endurance and bravery in war for a cause which he approved were proverbial, as was also his hospitality in peace.

He is often highly capable in languages, science, literary and technical education, and is inventive, as well as industrial, but not commercial. Imaginative, artistic, creative, rather than frigidly practical. Inclined at times to melancholy, brooding, pessimism, he is yet deep at heart for ever buoyant, optimistic, hopeful—hopeful not of possessions or power, but of human happiness, and of the freedom and future golden age of not merely his own, but all people.

COMENIUS—ONE OF THE GREAT MEN OF ALL TIME

Every nation has its local heroes, local geniuses, but these mean little for the rest of the world. Bohemia had a due share of such among its kings, reformers, generals, and especially writers; but it also gave the world many a son whose work was of importance for humanity in general and whose fame is international. Not a few of these were exiles or emigrants from the country of their birth, who, having settled permanently abroad, are only too readily credited to the country that gave them asylum. Germany and Austria, as the nearest geographically and with a language that the Czech youth were forced to learn, received most of such accessions; but some reached Holland, France, England, and even America.

One of the most honored names in the universal history of pedagogy is that of the Czech patriot and exile, Jan Amos Komensky, or Comenius (1592-1671), the last bishop of the Bohemian Brethren. Driven away, in 1624, after all his books and manuscripts were taken and burnt, he settles for a time in Poland, then in Holland. His pedagogical writings constitute the foundations of modern education. His best-known works in this connection are *Janua linguarum reserata* (1631), Labyrinth of the World (1631), *Opera didactica magna* (1657), and *Orbis pictus* (1658). This latter work is the first children's picture-book. He condemns the system of mere memorizing in school, then in use, and urges that the scholar be taught to think. Teaching should be, as far as possible, demonstrative, directed to nature, and develop habits of individual observation.

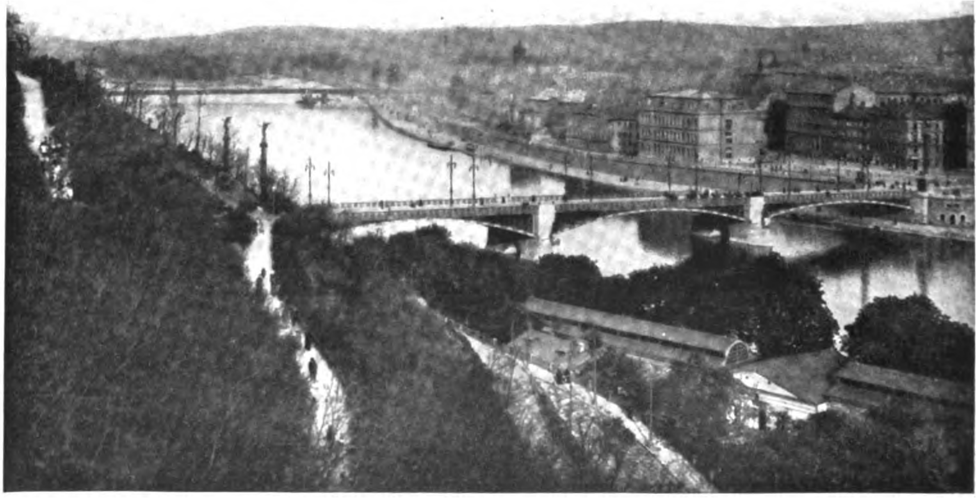
All children, without exception—rich or poor, noble or common—should receive schooling, and all should learn to the limits of their possibilities. "They should learn to observe all things of importance, to reflect on the cause of their being as they are, and on their interrelations and utility; for the children are destined to be not merely spectators in this world, but active participants."

"Languages should be taught, like the mother tongue, by conversation on ordinary topics; pictures, object lessons, should be used; teaching should go hand in hand with a happy life. In his course he included singing, economy, politics, world history, geography, and the arts and handicrafts. He was one of the first to advocate teaching science in schools."

The child should "learn to do by doing." Education should be made pleasant; the parents should be friends of the teachers; the school-room should be spacious, and each school should have a good place for play and recreation.

A PUBLIC SCHOOL IN PRAGUE, BOHEMIA

The Czech philosopher Comenius, who lived during the seventeenth century, the bloodiest of all centuries excepting our own, urged that all children, rich and poor, should be taught to read and write. His teachings were in part responsible for the compulsory education of all American children early enforced by American colonists (see pages 179 and 184).



Photographs from R. D. Szalatnay

GENERAL VIEW OF THE OLD CITY OF PRAGUE AND THE RIVER VLTAVA, WHICH THE COMPOSER DVORAK IMMORTALIZED IN A MUSICAL POEM in Europe from the old Bohemian historians. His historical works, as well as his statesmanship and other important activities, bring him the name of the "father of the nation." He is regarded as the foremost Bohemian of the nineteenth century; and his monument in Prague is one of the most remarkable works of art in Europe.

In the line of invention this earlier period gives Prokop Diviš (1696-1765), the discoverer of the lightning rod (1754), and Josef Ressl (1793-1857), the inventor of the screw propeller.

In science and medicine there stand foremost Jan Evang. Purkinje (1787-1869), founder of the first physiological institute in Germany and father of experimental physiology; Karel Rokytanski (1804-1878), the most deserving pioneer of pathological anatomy; Josef Skoda (1805 - 1881), the founder of modern methods of physical diagnosis of disease; Edward Albert (1841-1912), the great surgeon of the Vienna University; Ant. Frič (1832-1913), the noted paleontologist.

BOHEMIAN COMPOSERS AND MUSICIANS

The Bohemian pantheon is particularly rich in composers and musicians. Of the former one of the best known to the world is Bedřich Smetana (1824-1884), the founder of the modern school of Bohemian music and the composer, among many other exquisite works, of the "Prodaná Nevěsta" (The Bartered Bride), a national opera which has appeared repeatedly within the last few years at the Metropolitan Opera House, New York. The great cycle, "My Country," with the "Libuše" and "Dalibor," are a few other of his compositions.

Anton Dvořák (1841-1904) was admittedly the greatest composer of his time. His "Slavonic Dances" and his symphonies are known everywhere. Invited to this country, he was for several years director of the National Conservatory of Music in New York City, during which time he made an effort to develop purely American music based on native, and especially Indian, motives.

Among musicians the name of Jan Kubelik (1880-....) and Kocian are too well known in this country to need any introduction, and the same is true of the operatic stars Slezák and Emmy Destin.

Of poets the two greatest are Svatopluk Čech (1846-1910) and Jaroslav Vrchlický (1853 - 1912). They are not as well known in foreign lands as the Bohemian composers and musicians only because of the almost unsurmountable difficulties which attend the translation of their works. In novelists and other writers, of both sexes, Bohemia is rich, but as yet translations of their works are few in number and they remain comparatively unknown to the world at large.

The above brief notes, which do but meager justice to the subject, would be incomplete without a brief reference to a few of the most noted Bohemian journalists and statesmen of more than local renown. Of the former at least two need to be mentioned—Karel Havliček (1821-1856), martyred by Austria, and Julius Gréger (1831-1896), the founder of the Národní Listy, the most influential of Bohemian journals.

The most prominent modern ***statesmen*** of Bohemia are Karel Kramář (1860-....), since the beginning of the war in Austrian prison, and Thos. G. Masaryk (1850-....), since the war a fugitive from Austrian persecution, now at Oxford University, England. The sister of the latter is well known in this country and her recent liberation from a prison in Vienna was in no small measure due to the intervention of her American friends.*

BOHEMIANS IN THE UNITED STATES

It seems a far cry from Bohemia to this country, yet their relations are both of some import and ancient. The man who made the first maps of Maryland and Virginia, introduced the cultivation of tobacco into the latter State, and for these and other services became the lord of the "Bohemia Manor" in Maryland, was the

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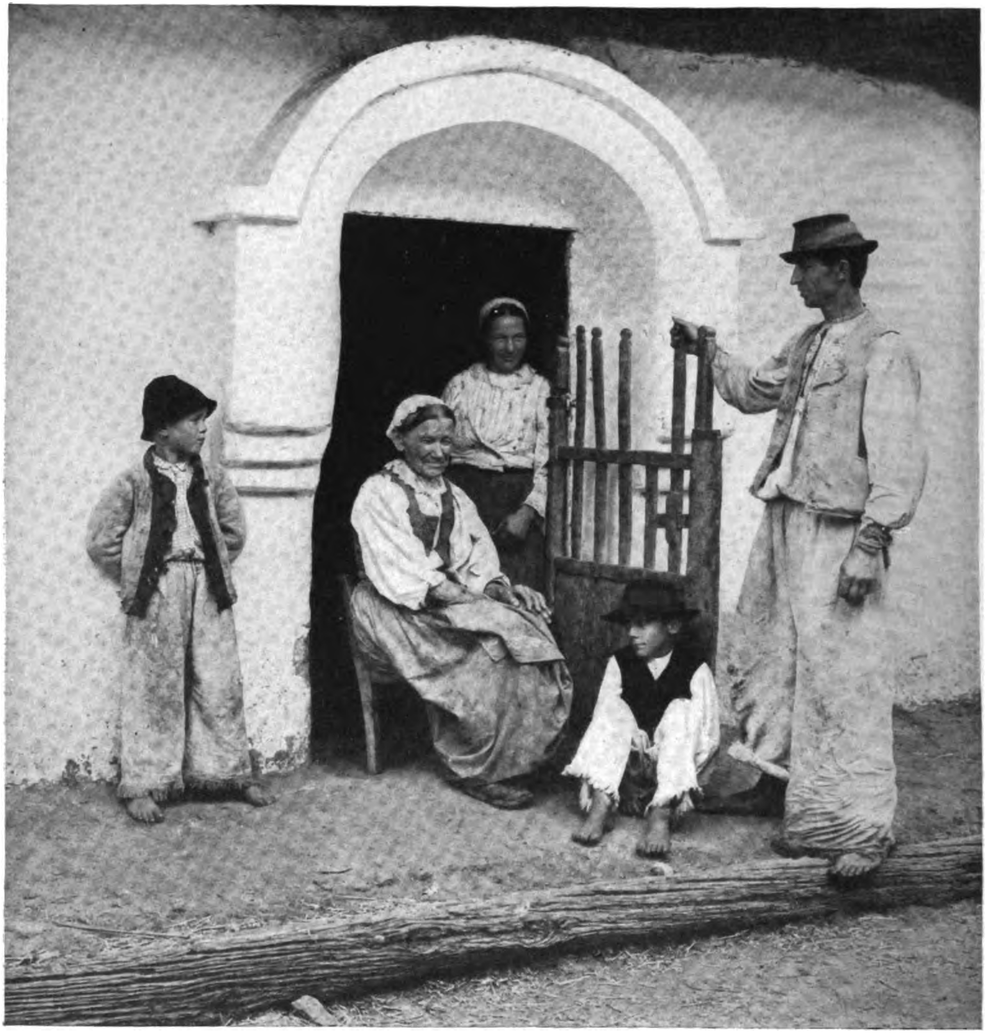
*Those who may be more closely interested in the more recent and still living men of note of Bohemia should consult Narodni (National) Album, Prague, 1899, which contains over 1,300 portraits, with biographies.



Photograph by A. W. Cutler

A SLOVAK PEASANT FAMILY IN EVERY-DAY DRESS

Note the Norman arch; it is typical of Slovak homes. Note the fringe at bottom of trousers, which are pretty wide when compared with English or American trousers, but positively skin-tight in comparison with the trousers of a Hungarian peasant. They are a highly respectable, hard-working community and may be seen in large numbers throughout the Vag Valley.

exiled Bohemian Jan Heřman, as were the parents of Philip, lord of the Philip's Manor on the Hudson, one of whose descendants came so near becoming the bride of Washington. Not a few of the Czechs came into this country with the Moravian brethren; and Comenius (see page 179) was once invited to become the President of Harvard University.*

The immigration of the Czechs into this country dates very largely from near the middle of the last century, when, following the revolutionary movements of 1848, from which Bohemia was not spared, persecution drove many into foreign lands. During our Civil War many Czechs fought bravely in the armies of the North.

The total number of Czechs now living, exclusive of Slovaks, is estimated at 9,000,000, of whom 7,000,000 are under Austria-Hungary; in the United States

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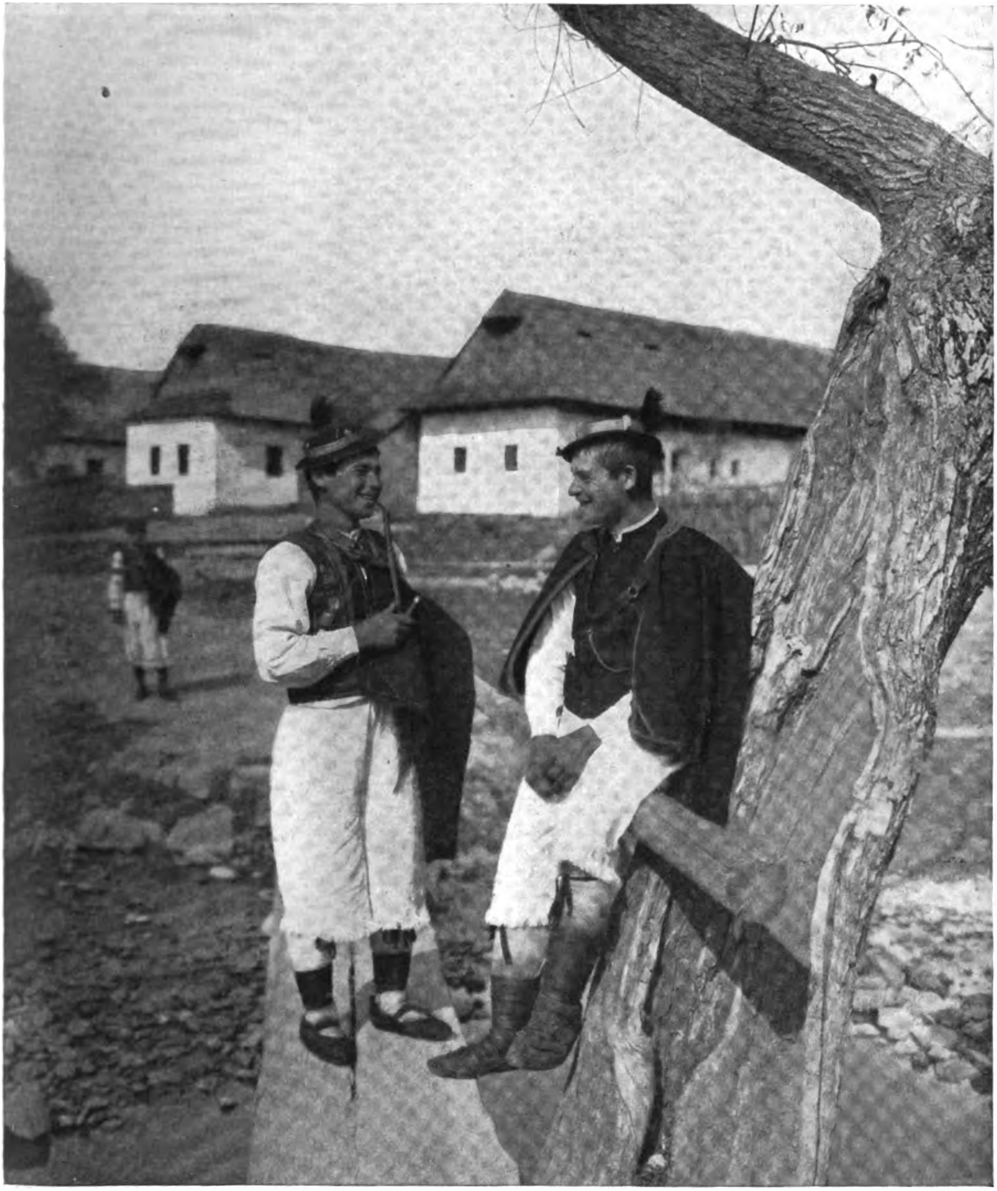
*"The Bohemians," E. F. Chase, N. Y., 1914.



Photograph by Erdelyi

YOUNG SLOVAK BEAUX

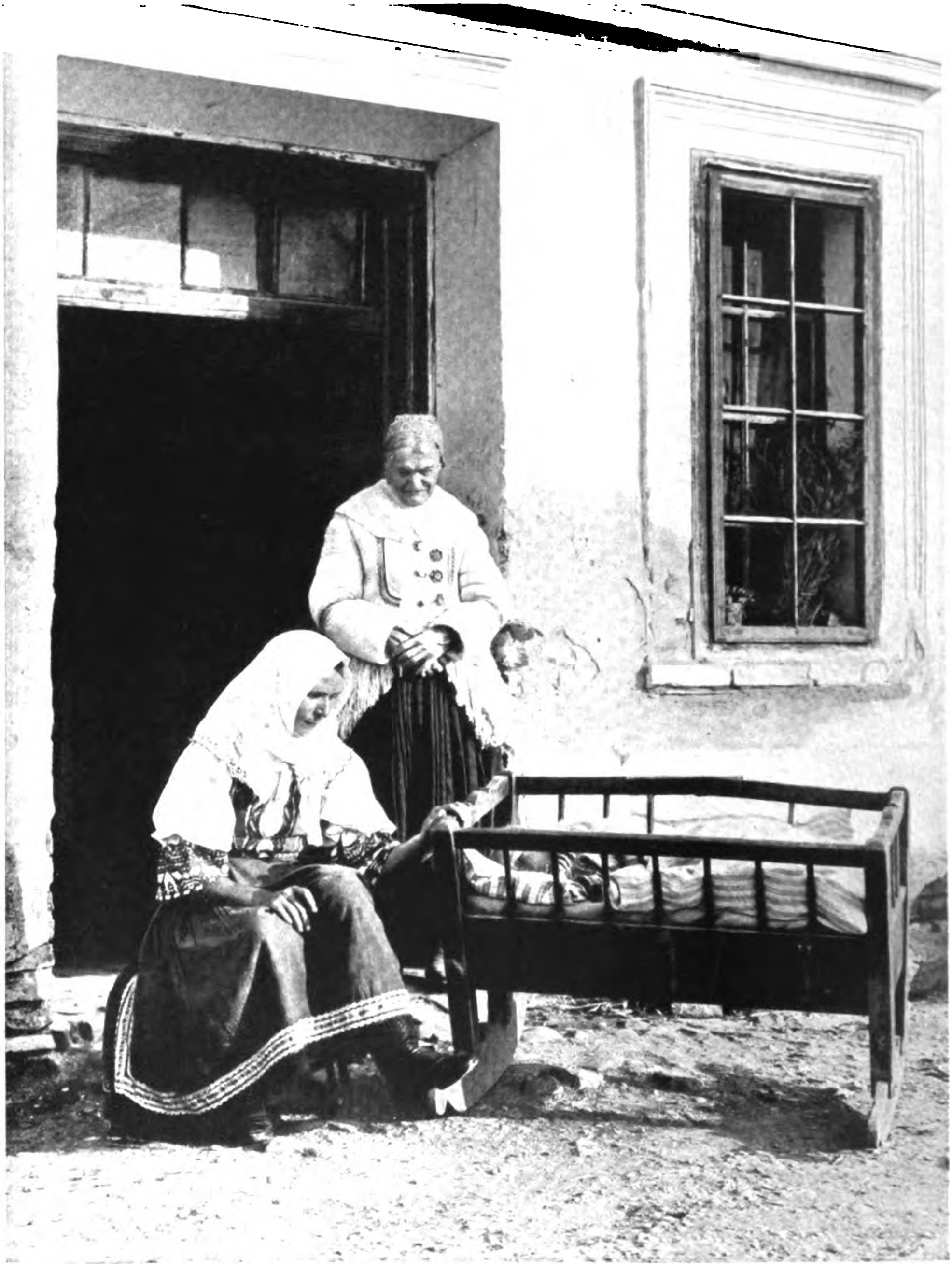
In the background are highland cottages. Note the embroidered trousers and shoes.

there are about 500,000, of whom one-half were born in this country.

They are found in practically every State of the Union, though the majority live in the Central States. Many are independent farmers or artisans, and it is only fair to say that they are everywhere regarded as desirable citizens. They take active part in the political and public life of the country. Two United States Congressmen, a number of members of State legislatures, and numerous other public officials are of Czech descent.

DISTINGUISHED CZECH-AMERICANS

In American science the names of men like Novy (Ann Arbor), Shimek (Iowa University), or Zeleny (University of Minnesota) are well known and honored, while the number of university students



Photograph by A. W. Cutler

SLOVAK MOTHER AND CHILD, SHOWING QUAINT CRADLES USED

Granny, who stands behind, is wearing a very comfortable coat, made of sheepskin; the wool is inside. It fits well and looks well, and granny knows it.

of Bohemian parentage is exemplified by the "Federation of Komensky (Comenius) Educational Clubs," with its many branches, and by the fact that the Bohemian language is now taught at the University of Nebraska and several other institutions of higher learning.

The true Bohemian here and elsewhere, as can easily be understood, has nothing but the bitterest feelings toward Austria, the stranger and usurper, who, since the war started, is once more in the full swing of his persecutions. The Czech sympathies are wholly with Belgium, Russia, Serbia, France, and Great Britain. And what is true of the Czechs is also true of the Slovaks, who suffer even more under Magyar oppression.

The Czechs and Slovaks in Austria-Hungary fight only under compulsion; their unwilling regiments were decimated; their political and national leaders fill the Austrian and Hungarian prisons. Thousands of Bohemian and Slovak volunteers are fighting enthusiastically under the banners of France and Great Britain, and there are whole regiments of them attached to the Russian army.

Here in the United States the very word of Austria sounds strange and unnatural to the Bohemian. They have found here their permanent home, and while hoping and even working for the eventual freedom of Bohemia, and proud of their descent from the Czech people, they are, citizens or not yet citizens, all loyal Americans.

FRAUDULENT SOLICITORS

THE ATTENTION OF THE MEMBERS of the National Geographic Society is invited to the fact that we are receiving reports of the activities of many fraudulent agents who are operating in various sections of the country, representing themselves to be authorized "agents" of the National Geographic Society. We are advised that these persons solicit membership in the Society and subscription to the Magazine at a reduced price.

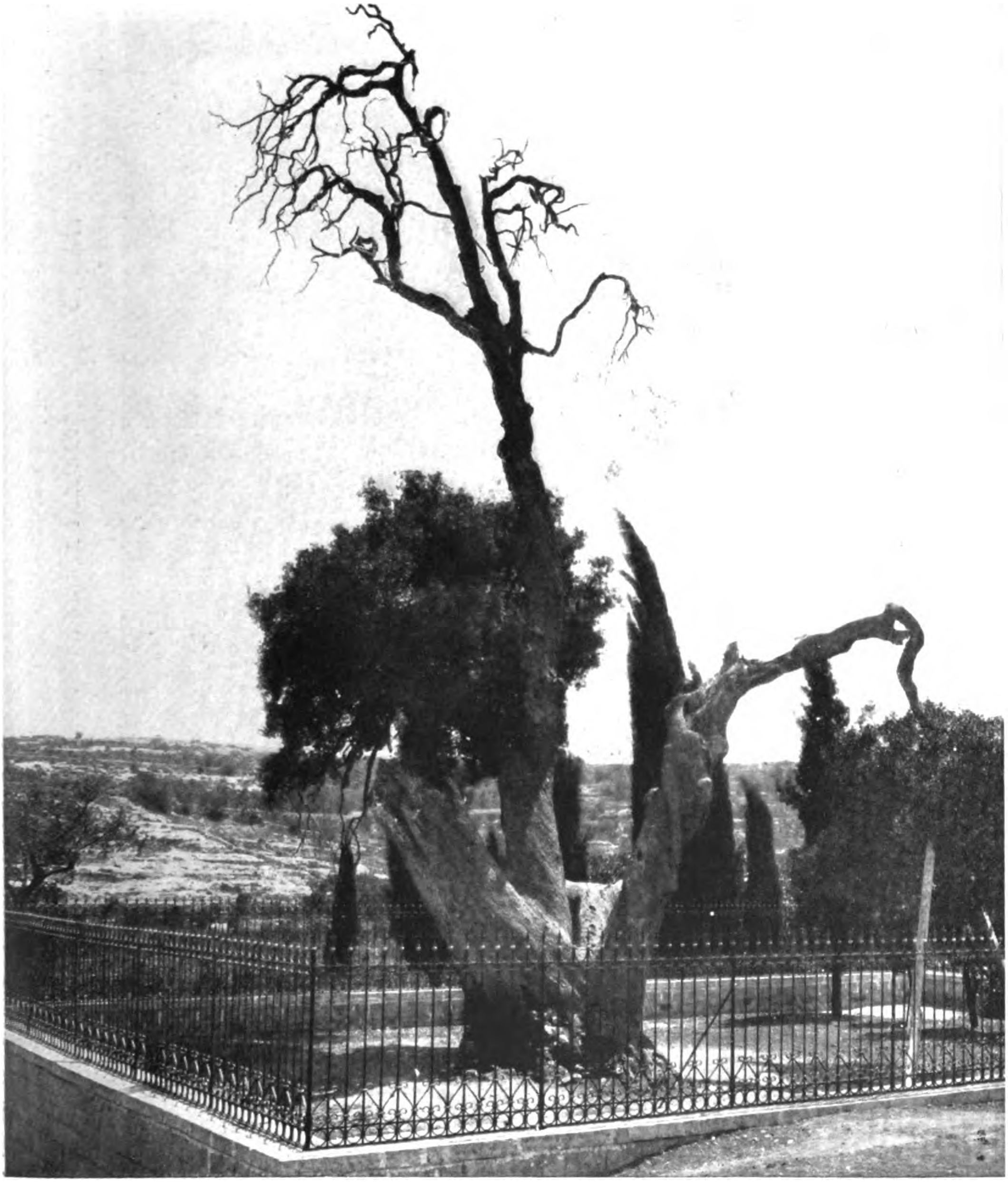
Many complaints have been received from persons who have paid in advance for maps and other publications of the Society which, of course, they have never received, since no knowledge of the transactions ever came to us.

The National Geographic Society has no authorized agents and employs no solicitors in the field. Therefore it is suggested that members of the Society send direct to the Society all orders, remittances, or communications of any kind.

Should you hear of any person claiming to be an authorized representative of the Society and soliciting orders, you will render a great service if you will immediately telegraph the facts to the National Geographic Society, Washington, D. C.

A CITIZEN OF BAGDAD

For descriptions of Mesopotamia and Bagdad, the City of the Caliphs, recently captured by the British forces, see "The Cradle of Civilization," by James Baikie, and "Pushing Back History's Horizon," by Albert T. Clay, NATIONAL GEOGRAPHIC MAGAZINE, February, 1916; and "Where Adam and Eve Lived" and "Mystic Nedjef," by Margaret and Frederick Simpich, NATIONAL GEOGRAPHIC MAGAZINE, December, 1914.

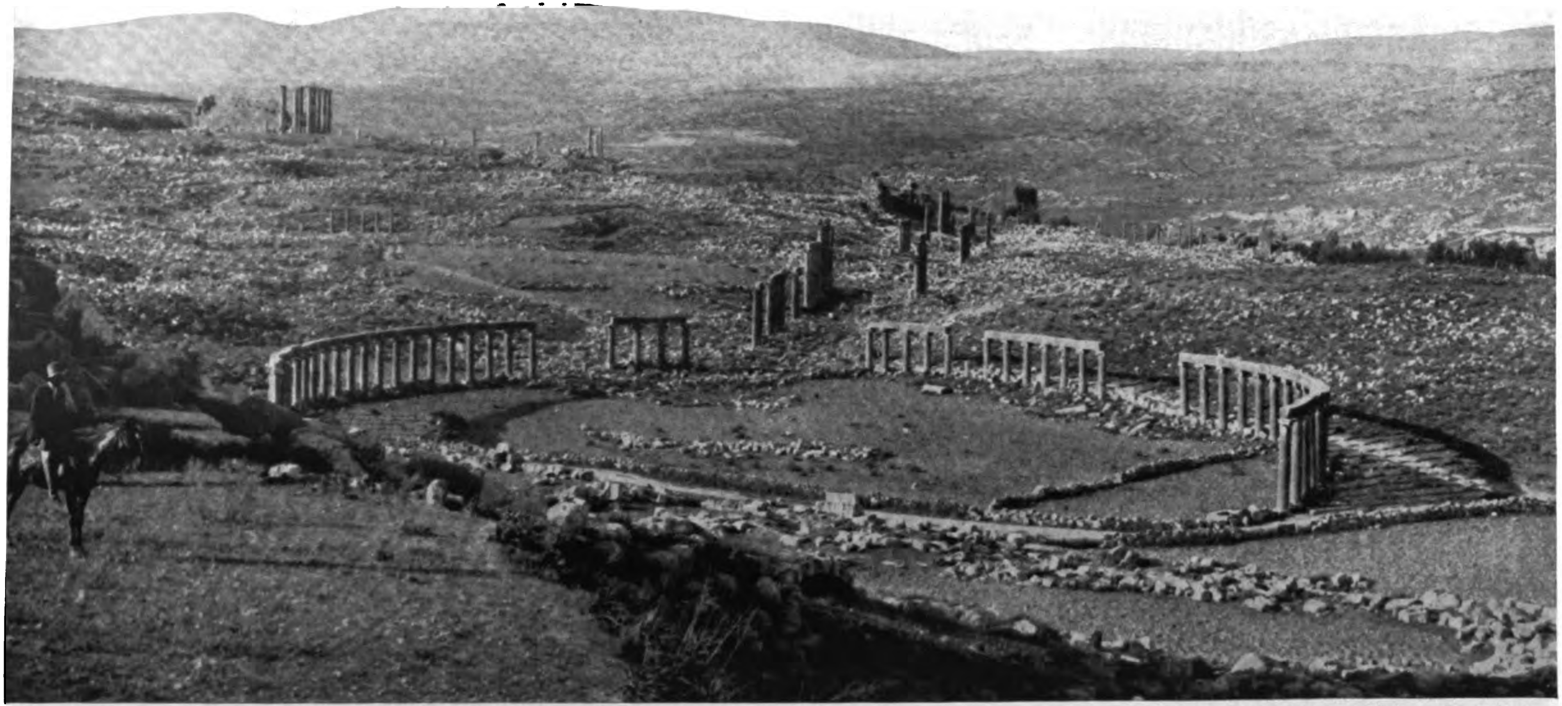


Photograph from George L. Robinson

ABRAHAM'S OAK, NEAR HEBRON, PRESERVED BY THE RUSSIAN ORTHODOX CHURCH

Abraham, wandering slowly with his possessions of cattle, sheep, and goats, made his headquarters for a long time at the oak of Mamre. Here it was that Sarah died, and Abraham went to Ephron, the Hittite, and bargained for the cave of Machpelah for a burial place.

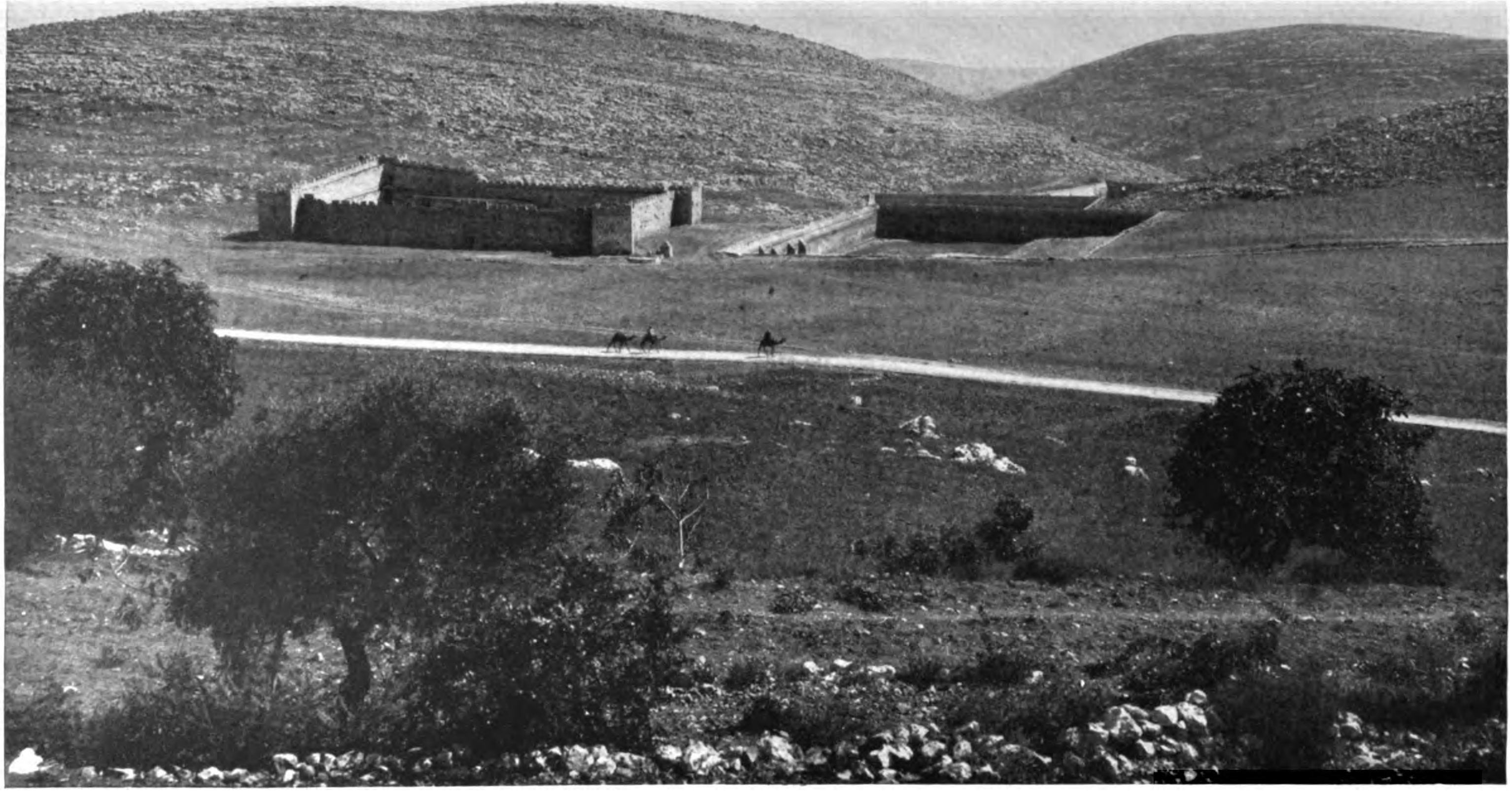
For articles on the Holy Land in the NATIONAL GEOGRAPHIC MAGAZINE, see "From Jerusalem to Aleppo," January, 1913; "Village Life in the Holy Land," March, 1914; "Jerusalem's Locust Plague," December, 1915—all by John D. Whiting.



Photograph by American Colony, Jerusalem

THE RUINS OF JERASH, SITUATED ABOUT EIGHTY MILES SOUTHWEST OF DAMASCUS

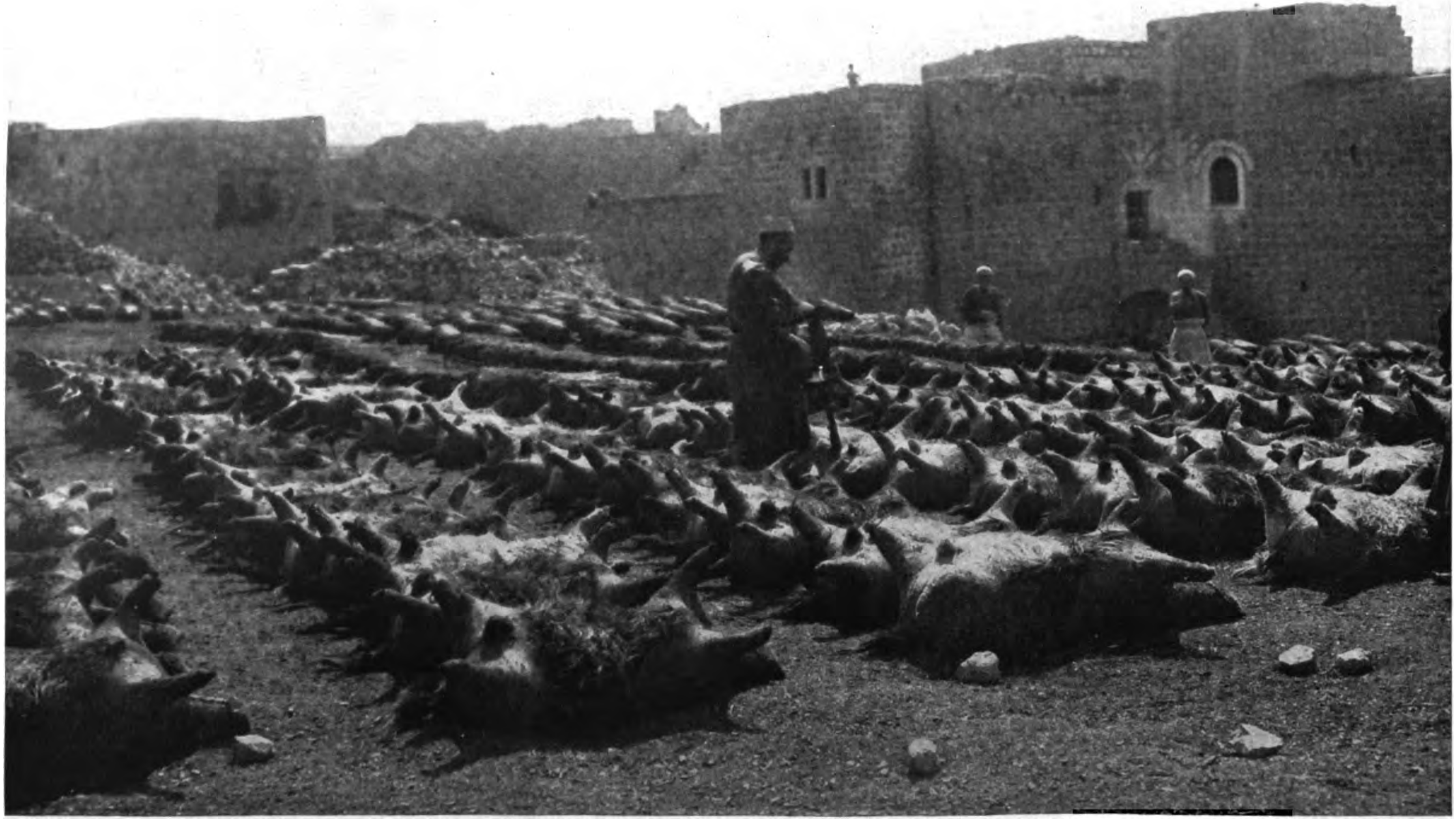
Jerash is a city of stupendous ruins, in size and importance second only to Palmyra, and in beauty of architecture surpassed only by Baalbec. It is the world's best example of the ancient Grecian city. Here was reared every structure that made life attractive to the Greek—the colonnaded street, the splendid forum, the beautiful temple, and the magnificent theater. According to Pliny, Jerash was one of the original ten cities which formed the Decapolis.



Photograph from George L. Robinson

ANCIENT KHAN, OR PUBLIC SHELTER, AND SOLOMON'S POOLS ON THE WAY TO HEBRON

Three perennial springs at the head of the great valley of the Wady Artas furnish water for the Pools of Solomon, while two aqueducts bring a further supply from distant springs, one of them nearly fifty miles away. The upper spring of the group is said to be the sealed fountain of Solomon's Song.



Photograph by American Colony, Jerusalem

A TANNERY IN THE CITY OF HEBRON, NEAR JERUSALEM, OCCUPIED BY THE BRITISH FORCES FROM EGYPT

Hebron claims to be the oldest city in the world. The Book of Numbers declares that it was built seven years before Zoan, and Zoan was Tanis, the chief town of the Egyptian delta in the second millennium before Christ. According to the Bible, Hebron's ancient name was Kirjath Arba. The Book of Joshua says that its inhabitants were a race of giants. Hebron is noted for its tanneries engaged in making skins for carrying water.

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THE NATIONAL GEOGRAPHIC MAGAZINE

WHAT GREAT BRITAIN IS DOING

BY SYDNEY BROOKS

THERE was a very striking passage in the speech which Mr. Lloyd-George recently delivered at the Guildhall soon after his return from the Allied conference at Rome. "There is one thing," he said, "that struck me and that strikes me more and more each time I attend these conferences and visit the Continent—I mean the increasing extent to which the Allied peoples are looking to Great Britain. They are trusting her rugged strength and great resources more and more. She is to them like a great tower in the deep. She is becoming more and more the hope of the oppressed and the despair of the oppressor, and I feel confident that we shall not fail the people who have put their trust in us."

It would be singularly unbecoming on the part of any British subject to seek to exalt the contribution that his own country is making to the common cause above that of any of the Allies. We can never forget our obligation to Belgium's heroic stand in crucial days, to the impassable wall of steel maintained by unselfish France until we could raise, train, and equip our armies, and to the brave and effective efforts of Russia in the east and united Italy to the south.

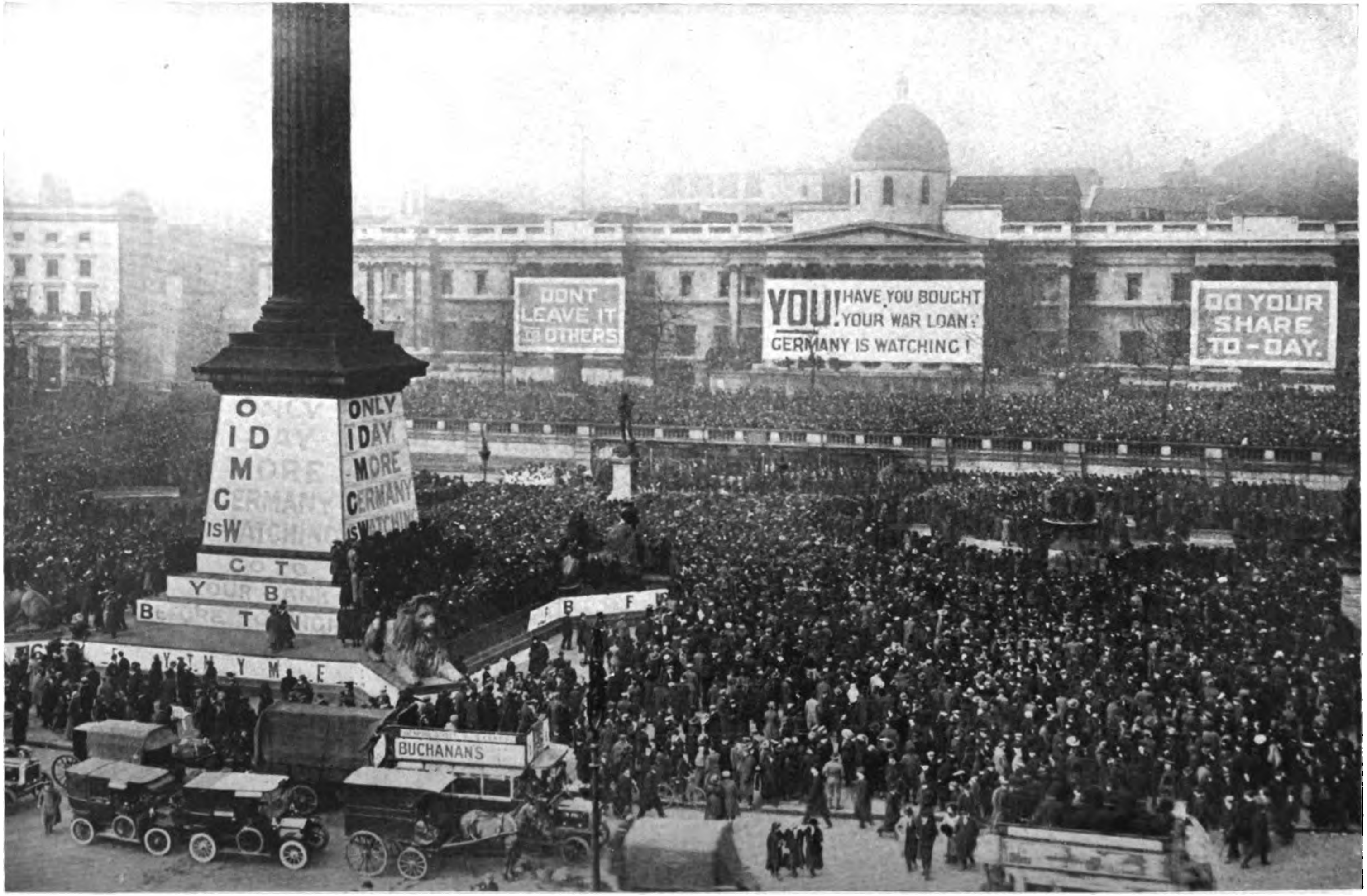
If we are now in a position to do rather more than any of them, it is because we have suffered less, because we have been spared the well-nigh mortal blow of an invasion of our territory, and because time has been vouchsafed to us in which to develop and organize our power. But there need be nothing vainglorious—nothing, indeed, but a sober recognition of facts and their responsibilities—in subscribing to Mr. Lloyd-George's estimate of the present situation.

Those who looked at the war with discerning eyes knew from its very beginning that Great Britain was, and could not help being, the linch-pin of the whole alliance. It has taken curiously long for that elementary fact to sink into the general consciousness. America, I should say, is only just beginning to realize it. No doubt it is largely our own fault.

If we had even one-tenth of the German genius for self-advertisement, the world would long ago have understood that without British power the Allies could never have withstood the Prussian onset, and that with British power an Allied victory—complete, smashing, and final—is as certain as the rising of tomorrow's sun.

As it is, Americans in general seem even now to have but an imperfect idea of what Great Britain has accomplished in this war. It is not, in my judgment, that they do not wish to know. It is mainly, I think, that they have been deluded by our old and deceptive trick of taking what we do well for granted and saying nothing about it, while we shriek our blunders from the housetops.

We are by all odds the worst advertisers in the world. We are the most inveterate self-detractors in the world. We


DONT LEAVE IT TO OTHERS
YOU! HAVE YOU BOUGHT YOUR WAR LOAN? GERMANY IS WATCHING!
DO YOUR SHARE TO-DAY.
ONLY 1 DAY MORE GERMANY IS WATCHING
GO TO YOUR BANK BEFORE TO-NIGHT
BUCHANANS

"GERMANY IS WATCHING": THE GREAT RALLY IN TRAFALGAR SQUARE, LONDON, THE DAY BEFORE THE FIVE-BILLION-DOLLAR WAR LOAN CLOSED, IN FEBRUARY

The number of people present was roughly estimated at from eighty to a hundred thousand. Every inch of space outside the civic inclosure [illegible] are the most persistent grumblers in the world. Nothing that other people say about Englishmen can ever hope to equal what Englishmen say about themselves.

And, being a strong, rebellious, self-sufficient people, tirelessly given to speaking out, we have naturally found in the dislocations and drama and surprises of the war an endless theme for self-depreciation.

Mr. Dooley once accused us of doing our national housecleaning by sweeping things under the sofa and sprinkling the walls with eau de cologne. There has been none of that in this war. We have published every blunder, we have exposed every shortcoming, we have taken every opportunity of informing our rulers in the plainest possible language just what we thought of them.

THE WAY OF DEMOCRATIC PEOPLES

Compared with the silence of Prussia—a silence never deeper than when concealing some untoward incident, some prodigious miscalculation — our British turmoil has seemed a token of confusion and inefficiency; but in reality it has been just the rough, wholesome, Anglo-American, democratic way of doing things. That is how all self-governing peoples who are used to free speech and who are not used to the discipline of universal military service must inevitably act when caught in a great crisis and obliged to shift the whole basis of public and private life in order to strip themselves for a fight for existence.

The Prussians from the first day of the war have shown themselves consummate masters of the art of magnifying all their successes and minimizing all their failures. Mirabeau more than a hundred years ago declared, and declared truly, that war was the national industry of Prussia. But Prussia since then has supplemented that industry with another—the manufacture of opinion, and not merely German opinion, but foreign opinion. The submissive intelligence of her own people she can, of course. mould as she pleases; but it is astonishing how often she succeeds in imposing upon dispassionate and even hostile onlookers in neutral lands.

At this game of words and appearances and making out a case she leaves every one of the Allies, and indeed all of them combined, very far in the rear.

Take, for instance, the Roumanian campaign of last fall. It was unquestionably a German military success. But it was nothing like the success that headquarters in Berlin tried to make out and that Americans were very largely induced to believe.

All those tales that came clicking over the wireless of the capture of huge stores of grain and oil were fables out of whole cloth. The Allies set fire to the oil wells one by one as the Roumanians retreated and removed or destroyed just as systematically almost the whole supply of foodstuffs.

The present position is that while the great bulk of Roumania has been overrun, from one-half to two-thirds of the Roumanian army is still intact, is being reformed and rearmed for the coming offensive, and that the Germans have to maintain an extra 300 miles of front that would not have been added to their commitments had Roumania remained neutral. From the standpoint of the war as a whole, we have, for the time being, but I agree quite unnecessarily, and as the result of some bad bungling somewhere, lost a pawn, and a pawn that, if employed in another direction, might and should have been extremely useful.

But Prussia has gained nothing except a barren kudos; the Roumanian territories she occupies are a liability and not an asset; to defend them she has to draw upon her swiftly diminishing resources of man-power; a few more such victories and she would be undone. Yet she has undoubtedly managed to fill the unthinking public in more than one neutral land with the idea that her successes in Roumania were in some sort a turning point in the war. I have read I know not how many articles in the American press gravely admonishing us to give up the Balkans as a bad job and withdraw our forces around Saloniki.

EXAGGERATIONS ARE AVOIDED

And in the same way it has been very noticeable how skilfully the Prussians belittled and how carefully the British and the French refrained from exaggerating the significance of the great retreat from the Somme.

The moral to be drawn is, I think, this: that you can cut all Prussian boastings and all British lamentations in half, and that when the Prussians are silent it is a sign of failure and when the British are silent it is a proof that all is going well. One could easily multiply instances of this.

Take, for example, our intelligence service. You never hear anything of it. It works as a secret service ought to work—in secret. It enjoys not one-half of the reputation, it attracts not one-tenth of the notoriety, of the German intelligence service. Yet those who are at all behind the scenes know very well that there is precious little hidden from it in any part of the world where it is at work and, least of all, at the front. What our men do not find out about the numbers, distribution, equipment, and morale of the German troops along the Somme may safely be left out of the reckoning.

Similarly, without saying much about it, we quietly at the beginning, or, rather, before the beginning, of the war, rounded up all the Prussian spies in the British Isles, and have so handled matters that none of their successors, to the best of my knowledge and belief, has done us any appreciable harm.

This policy of leaving what we do well to speak for itself has been closely followed in the case of our flying corps and our submarines. We have no aviation heroes. In fact, we rather make a point of having as few heroes of any kind as possible. There are at least a dozen of our flying men whose records in bringing down enemy machines would compare quite favorably with those of the much-trumpeted German champions—Immelmann and Boelcke.

But we never hear of them. Their doings are merged in the general record of our armies at the front, where divisions are very rarely named, regiments and battalions scarcely at all, and individuals practically never. Instead of the flashy prominence of a few men here and there, we are quite content to shelter behind the anonymous but incontestable superiority of our flying corps as a whole—a superiority so great that during the latter months of the battle of the Somme the Germans were virtually fighting blindfold.

PRUSSIAN SUBMARINES INEFFECTIVE

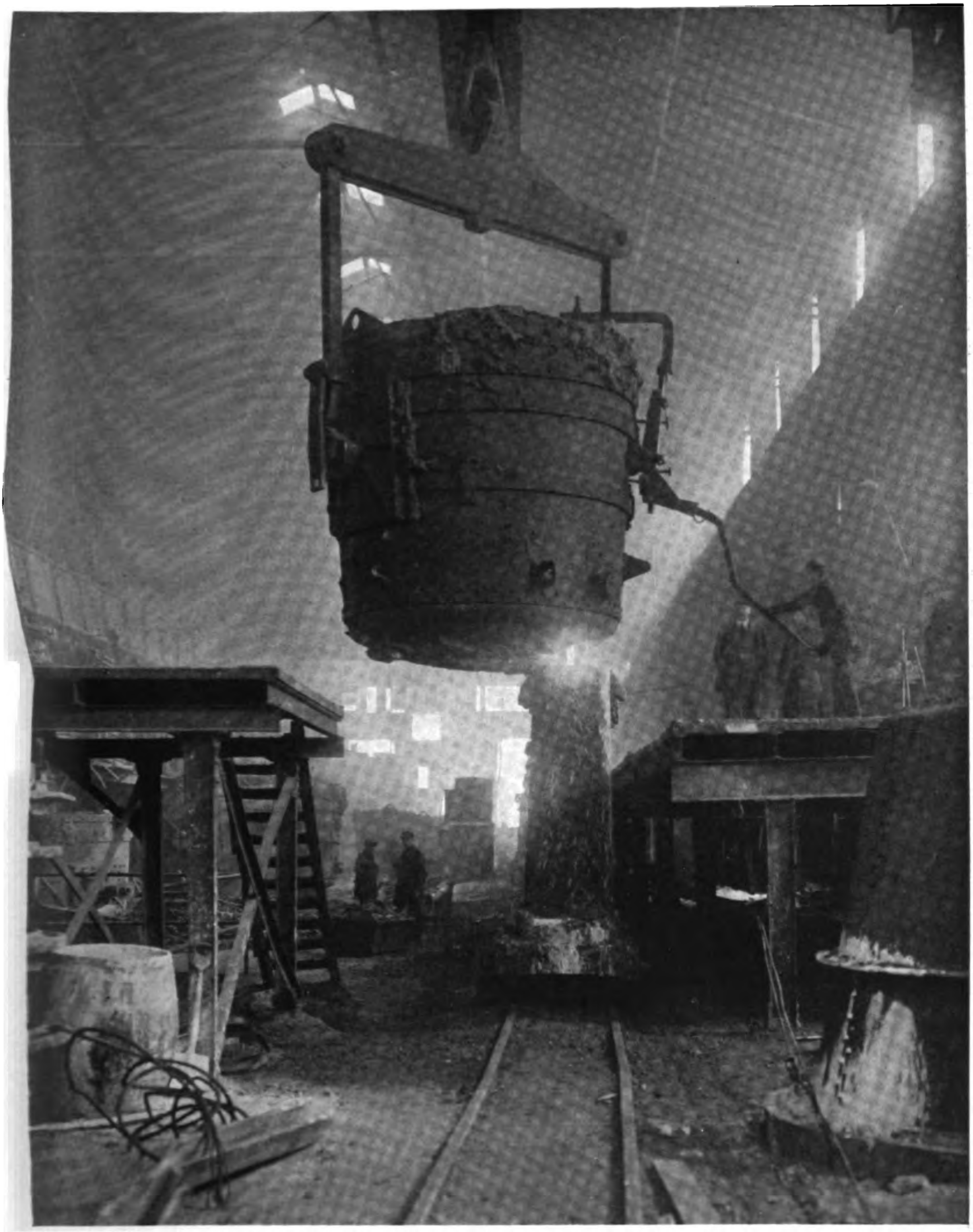
And just as we never advertise the feats of our armies, so we allow the world to think that the Prussians are having it pretty much their own way with their submarines. As a matter of fact, the German submarines have scored very few legitimate successes — by which I mean successes that conform to the usages of civilized warfare. It must be nearly two years since they sank any British men-of-war of any importance.

As pirates preying upon fishing smacks, trawlers, Atlantic liners, and the merchantmen of all nations, they have added a new and infamous chapter to naval history. Otherwise it is, I believe, the opinion of most naval men that in German hands the submarine has proved disappointingly ineffective.

What the British submarines have accomplished in the Dardanelles, in the Sea of Marmora, and in the Baltic has been far more remarkable, though far less known, than the exploits of the German U-boats.

Moreover, it has to be remembered that the Germans have something like a hundred chances to our one; that our fleets are constantly cruising in the North Sea, where the German dreadnoughts and cruisers very rarely venture; and that if our submarines had been offered anything like the opportunities we are ceaselessly dangling before the Germans, and if by now they had not sent several German battleships to the bottom of the sea, the world would have justly said that they had bungled their business.

People, I remember, were thrown into a state of quite unbalanced admiration when the *Deutschland* appeared in American waters. It was spoken of as one of the most remarkable achievements of the war. Few stopped to remember—even indeed if they ever knew—that the war was only a few months old when ten British submarines crossed the Atlantic



CASTING THIRTY TONS OF MOLTEN STEEL IN ONE OF CANADA'S LARGE STEEL PLANTS

"The rally of the Empire to the side of the motherland has, indeed, been one of the most marvelous and one of the most momentous episodes of the war. . . . When the storm gathered, the Dominions said with one voice: 'Whatever happens, we are with you.' When it burst, they said: 'Everything we have is yours.'"

from Halifax to the British Isles—the first submarines in naval history to make the journey under their own power.

We could, of course, if we liked, if we were given to that kind of grand-stand play, arrange for a succession of British submarines to pop up with the most dramatic effect in every single one of the American east coast harbors. But as we prefer the realities of sea-power to its tinsel, the inducement to any such theatricalities is largely lacking.

THE SILENT VOICE

Similarly, while we publish a list of all the vessels sunk by Prussian submarines, we say not a word about the U-boats whose careers are brought to a sudden stop. For myself, I honestly do not know how many of them we have caught, sunk, or destroyed. It may be 180; it may be 200; it may be 220. They come out and they do not return, and there is no one in Germany, and perhaps not half a dozen people in England, who know what becomes of them.

The reasons for our secrecy must be tolerably obvious to any one who thinks the matter over. All that the Germans are able to infer from the failure of any given U-boat to return to port is that somehow or other it has been lost. But how or where they cannot tell.

It may have been through some error of structure or design—a thought to send a chill down the spine of every admiralty official. It may have been through a mistake in navigation. It may have been through one or other of the endless and constantly changing devices that British ingenuity has evolved and brought into play against the new piracy. It may, too, have happened near the German coast or after the U-boat had reached its appointed station. They cannot tell.

They are faced with a blank wall of possibilities that they have no means of verifying. Weeks must often elapse before they can be sure that a submarine which they thought was operating in a certain area had really perished, and that another boat should be dispatched to take its place.

And from another point of view the reasons for reticence are not less urgent. The British admiralty is frequently unable itself to decide from the reports of the naval officers who have come to grips with the submarines whether the enemy vessel was actually destroyed. Some cases are clear; in many there is a margin of doubt; and there can be no question that it is better to say nothing at all than to put forward official claims which cannot be substantiated and which the enemy may be in a position to disprove.

Sometimes, however, the veil of mystery is partially lifted. Sometimes a German U-boat is towed up the Thames, moored to the embankment, and from $75,000 to $100,000 collected for some naval charity by throwing it open to the public. Sometimes if you are dining with a naval officer you will hear wondrous tales of submarines netted, bombed by aëroplanes even when they are well below the surface, hunted and caught by destroyers, induced by one ruse after another to show themselves where they can be got at.

Sometimes, too, in a British port the men of the merchant marine will tell you of Homeric combats that would have warmed the heart of Nelson and Farragut and made Drake and Frobisher gasp and stare.

But these are mere haphazard personal gleanings. No one knows the full extent of the harvest or how it has been gathered in. But we do know enough—or at any rate we think we do—to feel fairly confident that the Germans can attempt nothing and can invent nothing that we cannot find the means of countering; and that confidence has been rather more than justified by all that has happened since February 1.

With the Prussians succeeding in sinking only about one in every hundred ships that enter or leave the British ports; with three-fourths of all our merchantment that are armed successfully resisting destruction; with the speeding up of shipbuilding and the multiplication of means of defense; with both imports and exports not merely not falling off, but steadily and positively increasing—with these as the first fruits of the intensified submarine campaign, we feel that while there may be cause for apprehension, there is little or none for alarm.

Photograph by F. J. Koch

AN OBJECT LESSON IN HIGHLAND KIT PACKING

THE REASONS OF BRITAIN'S POWER

But unquestionably our habit of not talking except when things are going awry has led to some curious misunderstandings and underestimates of the scope and character of the British effort; and I can well imagine that Mr. Lloyd-George's statement, with which I opened this article—his statement about the increasing dependence of all the Allies upon Great Britain and about the main burden of the war falling on our shoulders—must have been received by many Americans with something like incredulity.

It is worth while, therefore, to examine it more closely and to inquire in some detail what it is that has given Great Britain in this immeasurable cataclysm her extraordinary position as the axle on which all else depends.

It is, first, her naval power; it is, secondly, her wealth; thirdly, it is her industrial resources; fourthly, it is that serene and silent doggedness in the national character which in two and a half years has converted an unarmed, commercial, and rather easy-going nation into a military power of the very first rank, and that animates all the Allies with the knowledge that Great Britain can be relied upon to the uttermost.

THE BRITISH FLEET

I like to think of some future Mahan using the history of this war to point the deadly realities of sea-power. He will need no other example. Everything that naval supremacy means or can ever mean has been taught in the past 32 months in a fashion that he who runs may read.

Suppose Great Britain had remained neutral and the British navy had never moved. What would have happened? The German and Austrian dreadnoughts, with a five-to-one preponderance over the combined dreadnought strength of France and Russia, would have held an easy command over the sea. Germany could then have supplemented her land attack by disembarking troops on both

Photograph by George Bell.

A COLONIAL ENGINEER CORPS IN THE MAKING: INSPECTING ENGINEER TROOPS UNDER TRAINING FOR SERVICE "SOMEWHERE IN FRANCE" the Russian and the French coasts in the rear of the Russian and French armies; she would have shut off all the French oversea trade; she would have captured or destroyed or driven into port practically the whole of the French and Russian merchant marine; France would have been blockaded; with her chief industrial provinces in German occupation, she would have been prevented from importing any food, any raw material, any munitions; while Germany would have been free to draw on the resources of the entire world. In less than six months, for all her magnificent valor, France could not but have succumbed.

That was the Prussian calculation and it was a perfectly sound one; but it fell like a house of cards when Great Britain intervened. Instead of securing at once the command of the sea, Germany lost it at once. Everything that she had hoped to inflict upon France and Russia by maritime supremacy was in fact inflicted upon herself. What has made it possible for us to land some 2,000,000 men on the Continent of Europe, equipped with every single item in the infinitely varied paraphernalia of modern war?

AN UBIQUITOUS AND UNSHAKABLE POWER

How have we been able to conduct simultaneous campaigns in Egypt, East Africa, the Cameroons, Southwest Africa, the Balkans, and the Pacific? There are Russian troops fighting at this moment in France and round Saloniki. How did they get there?

From all the ends of the earth British subjects in hundreds upon hundreds of thousands have flocked to the central battlefield. What agency convoyed them? What power protected them?

The United States has built up with the Allies a trade that throws all previous American experience of foreign commerce into the shade. But how many Americans, I wonder, stop to ask themselves how it is that this vast volume of merchandise has crossed the Atlantic in the midst of the greatest war in all history almost as swiftly and securely as in the days of profoundest peace?

One by one Germany's colonies have been torn from her grasp—those oversea possessions the children of so many hopes, the scenes of such unremitting labor, the nursing plots of such vast ambitions; and not a single blow has been struck in defense of them by the fatherland itself. One and all have had to rely on their own isolated and local efforts.

They have looked in vain to Germany. Germany — paralyzed by what power? held down in helplessness by what mysterious spell?—has impotently watched her beginnings of a world-wide empire shattered beneath her eyes.

How is it, again, that the Belgian army has been rearmed, reconstituted, and reequipped? How is it that the Serbian forces have similarly been rescued and remade? How is it that Russia has been remunitioned, that Italy has been enabled to overcome her natural deficiencies, that France, in spite of the loss of some of her most highly industrialized districts, is still, for purposes both of war and of commerce, a great manufacturing nation and that all the Allies can import freely what they need from the neutral world?

To what ubiquitous and unshakable power, stretching from Iceland to the Equator and back again, guarding all oceans, girdling the whole world, are these miracles due? They are due to just one thing—the British navy. Because of the British navy, Germany is a beleagured garrison, her strength steadily, ceaselessly sapping away; her people languishing physically under the stress of the blockade, and financially and economically under the total loss of her foreign trade.

IT SUPPORTS THE EDIFICE

Defeat the British navy and the war is over in six weeks. There lies Germany's nearest road, not only to peace, but to full and final victory. Take away from the Grand Alliance the support of the British navy and the whole structure collapses into nothingness.

Some Americans may have wondered why Prussia last fall should have begun to squeal for peace and why, on failing to get it, she should have renewed, even in face of the almost certain prospect of uniting nearly the whole neutral world against her, her campaign of murder on the high seas.

THE IRON HEEL THAT CRUSHES BELGIUM

This great river, the Meuse, rises in France and flows across Belgium, through the Netherlands, and joins the left branch of the Rhine near Gorkum, to empty into the North Sea at the Hook of Holland. On its banks in France are the cities of Verdun, Sedan, Mezieres, and Givet. In Belgium it calls at Dinant, Namur, Huy, and Liége, while in Holland the cities of Maestricht, Roermond, and Venlo depend upon it to furnish [illegible]

But the answer is very simple. It is because the British navy is preying upon her vitals; because the pressure of our naval thumb upon her windpipe is never relaxed for one moment; because all triumphs on land are illusory and untenable, with privation and discontent mounting up at home; because by commanding the seas we hold the master key to all economic vitality and to all strategic mobility.

Germany has really had no option but to use her submarines for all they are worth. Her one chance of staving off defeat is to raise the British blockade, to break British sea-power, to starve Britain into surrender. It is a ten or a twenty to one chance against success. But what does that matter when it is her only chance?

She sees and sees correctly that our control of the oceans is not a mere adjunct to the strength of the Alliance. It is its basis. It supports the whole edifice. Without it all that the Allies have built up would crumble to pieces. With it they can erect, as on a rock, the instruments of certain victory.

But sea-power is not the only, though it is by far the greatest, of the contributions that make Great Britain the mainstay of the Alliance. We are its bankers, as well as its guardians on the sea. By now we must have advanced to our Allies not less than $4,000,000,000. Virtually we have taken on our shoulders the responsibility for the credit of the Alliance abroad.

BRITAIN'S WAR FINANCES

And at the same time that we are rendering this service we are spending more in a month than the United States Government, not by any means the most economical in the world, has been compelled to spend in the whole of the last year; our weekly outlay averages some $200,000,000; we have raised on credit over $25,000,000,000, or about five times the generally accepted estimate of the cost of the entire Civil War; our yearly revenue, about four-fifths of which is raised by direct taxation—there are many men in Great Britain at this moment who are paying out to the State more than half their income—amounts to some $2,500,000,000.

And as for the unstinted outpouring of private generosity, let this one fact suffice: that a single London newspaper, acting on behalf of a single fund, has raised nearly as much money as all the American people, the whole hundred millions of them—and they most certainly have not been behindhand in their generosity—have given to all the war charities combined. I should judge that by now the British people must have subscribed for their own sufferers by the war and for their Allies at least $500,000,000.

But besides placing our purse and our fleets at the service of the Alliance we are also its main arsenal and workshop. To Great Britain all who are fighting with her turn as to an inexhaustible treasure-house and rarely turn in vain. Is it ships, or provisions, or clothing, or raw material, or coal, or guns, or shells, or any other item in the endless catalogue of war? At once and unhesitatingly, for whatever they may happen to need, the Allies with one accord come to us; and it is our proud privilege to satisfy, as far as we can, every one of their demands.

A NATION REWROUGHT INDUSTRIALLY

I am not sure that in this country there is much more than a very hazy conception of the industrial revolution that has been wrought by the war in Great Britain. It is not merely that we have scrapped old machinery with a more than American ruthlessness. It is not merely that some of the best and most scientific brains in the Kingdom are now giving their attention, and with astounding results, to the problems of manufacture, or that capital and labor were never working more harmoniously together, or that trade-union practices which interfered with the maximum production have been done away with.

It is not merely that over 4,500 firms, not one of which before the war even dreamed of making munitions, are now engaged on nothing else, or that we have erected over 100 colossal government factories for turning out shells, guns, powder, and the implements of trench war-

"NO PRICE CAN BE TOO HIGH
WHEN HONOUR AND FREEDOM
ARE AT STAKE"

A POPULAR DEMONSTRATION BY THE NELSON COLUMN IN TRAFALGAR SQUARE, LONDON, ON NELSON DAY

fare; or that we have trained and organized and are now employing on war work some 3,500,000 people; or that we have discovered and utilized the immense, the hitherto unused, industrial capacities of women.

It is not merely that the government is branching out in a hundred helpful directions and backing up our merchants and manufacturers with all the resources at its command. It is not merely that our biggest firms are everywhere getting together and organizing the trades to which they belong as they have never been organized before.

Nor is it merely that questions of industrial welfare and efficiency and the whole economy of production are being studied with incomparable zeal, and that nothing since the introduction of the steam-engine has so renovated, sent such a stir through all branches of British industry, as this war.

These are not the things that matter. What matters is that Britain is working; has taken off her coat; has ceased to be a land of leisure, and has become a land of infinite labor. And to what effect she is working may be judged by the fact that in spite of the vast exodus from industry to the army and navy, and in spite of the concentration of the main labor force upon munitions, her exports of ordinary commercial commodities reached last year a value only once exceeded in the most prosperous times of peace.

A MIRACLE OF ACHIEVEMENT

Talk of German efficiency and German organization! I know of nothing in Germany's conduct of the war that for sheer genius and flexibility surpasses the industrial transformation that the past thirty months have produced in Great Britain.

How we have worked up our output of high explosive shells to a point where it leaves the German factories far behind—and less than two years ago Germany was turning out a hundred times as many of these shells as we were; how we have grappled with and solved pretty nearly every one of the technical problems that the war has sprung upon us, and how in doing so we have had to turn all our industrial arrangements upside down and to create what is nothing less than a new industrial order—all this it would need a volume, and a very fascinating one, to describe.

We were set what seemed a hopelessly impossible task and we have accomplished it: and our present independence of America in the supply of munitions and the fighting throughout the latter half of 1916 on the Somme front are more eloquent than any statistics could be of the magnitude of our effort.

But I should just like to say a word or two as to the services that in this way we have been able to render the Allies. I suppose that we must have placed at their disposal not less than 500 British ships. There are special factories in Great Britain solely devoted to meeting the armament needs of Russia, of France, and of Belgium. Shells, field howitzers, heavy guns, grenades, machine-guns, and small arms leave British ports in immense quantities day after day for the use of our Allies.

THESE WONDERFUL FEATS MADE POSSIBLE BY WOMEN

One-third of our total production of shell steel goes to France. That fact alone, to those who understand the character of this war, is an epitome of Great Britain's industrial contributions to the common cause. Three-fourths of the steel-producing districts of France are occupied by the enemy, and our ally absolutely depends on us and on our command of the sea to procure the essential basis of all modern warfare.

It is the same with other metals—with copper, for instance, antimony, lead, tin, spelter, tungsten, mercury, high-speed steel, and other less vital substances. All these we are manufacturing in Great Britain or in other parts of the Empire, or purchasing in neutral lands and delivering to our Allies, under the protection of the British navy, to the value of over $30,000,000 a month.

Millions of tons of coal and coke reach them from our shores every week; one-fifth of our total production of machine tools is set aside for them, and huge cargoes of explosives and machinery are daily dispatched to their address.

It was with the products of British workshops, rushed to the Mediterranean in British ships and guarded by the British navy, that the Italians were able to push back the Austrian offensive of last May; and the shells and guns which we had manufactured for and transported to Russia were the real starting point of Brusiloff's triumphant sweep through Galicia.

The immensity of productive effort required to meet these demands could never have been sustained had it not been for the women. They have entered pretty nearly every trade and occupation, however arduous and dangerous, in the intensity of their desire to "do their bit," and it is one of the compensations of the war that it should have revealed to us the full splendor of British womanhood.

Nor could we have borne our unique burden without organizing powers of the highest efficiency. There is a legend abroad, which we are much too busy and also much too lazy to refute, that Great Britain in this war is following her normal habit of "muddling through." As a matter of fact, she owes her present predominance precisely to the efficiency which the struggle has surprised out of her.

PROPHETIC MEASURES

In almost all the big commercial and administrative undertakings that are inseparable from war, and without which victory cannot be achieved, the British Government has come off with flying colors. Its statesmanship, for instance, in the early days of the war saved the fabric of international credit from what might have been irreparable ruin.

The measures by which it assumed control of the railways and has since directed them were so well thought out that scarcely a life, or an hour of time, or a ton of stores or equipment has been lost in the whole tremendous business of transporting and supplying our armies overseas.

A SAMPLE OF CANADA'S CONTRIBUTION TO THE BRITISH FORCES

One might recall, again, how its scheme for insuring cargoes and hulls gave instant confidence to the shipping world and went far toward maintaining that regularity of our food supplies which so far has been one of the wonders of the war.

One might recall, too, how it bought up some $90,000,000 worth of sugar and succeeded for a long while in keeping that essential commodity cheaper in England, which has to import it, than in Germany, which produces it.

Similarly, it got a not less effective control of the refrigerated meat trade; it made enormous purchases of wheat and oats without any one, even in the Chicago pit, suspecting that the British Government was the buyer; it bought up the whole of the Norwegian fish supply; it has regulated the price of coal; it has overridden not less successfully the ordinary laws of supply and demand in the case of wool, flax, and jute, to the immense benefit of the State, of the textile trades, and of our Allies.

It is now, under Mr. Lloyd-George's leadership, branching out into a far more minute scheme for controlling the production and distribution of the food of the entire country. It is taking over the shipping trade, the mining industry, and most of the liquor trade.

It is feeling its way toward a system of compulsory civil service as a complement to compulsory military service, so that every man not wanted in the army—and every woman, too—may be set to work where his or her labor can be most useful to the State.

There is not the smallest doubt that it will prove as efficient in these as it has in all its other business enterprises—as it proved, for instance, in devising and in inducing Holland, Norway, and Denmark to accept its plan for rationing those countries more or less in accordance with their ante-bellum needs; and as it also proved in the very complicated arrangements that have to be made with the cotton, metal, and textile trades in the United States.

Even our press censorship, for all its stupidities in the opening months of the war, has triumphantly fulfilled its main purpose, that of preventing the publication of any news which might be of use to the enemy; and if Americans will quietly sit down and imagine the entire American press muzzled into a similar innocuousness they will begin to appreciate at least one of the many hundred problems that the British Government has had to solve. The censorship of the mails is another masterpiece of organization.

Certainly the civilian, English or American, who visits the British front these days and who realizes that every man and every ounce of stores and every pound of equipment, and, indeed, the whole army and all it eats and wears and uses, and the weapons wherewith it fights, have been brought there after two railway journeys and one sea journey, involving at least four and possibly six changes and transshipments, becomes just a little tired when he hears the British accused of inefficiency. And the longer he explores the bases and takes in the perfection of all the arrangements for feeding, supplying, and nursing these tremendous hosts and for making good the casualties to material, the more he perceives that Great Britain is winning this war by the rapidity and completeness with which she has thrown overboard all the slouchy standards of peace.

"EVERYTHING WE HAVE IS YOURS"

And when I say Great Britain I mean, of course, not the men and women of the United Kingdom only, but all British subjects everywhere. The rally of the Empire to the side of the motherland has, indeed, been one of the most marvelous and one of the most momentous episodes of the war.

Wherever the British flag waves, in places the ordinary Englishman has barely heard of, among peoples of whom he knows next to nothing there is today, as there has been since the war began, but one impulse and one resolve. From the 450,000,000 British subjects, infinitely varied in speech and creed and color, in habits and geographical distribution, in economic circumstances and pursuits, there breathes the single intense determination to persist in this struggle till victory has crowned our united arms.

The world has never seen anything like it. The Crusades bore but the faintest resemblance to this spontaneous rising of the free communities, scattered over the seven seas, on behalf of a cause that passionately appeals to their sense of right. The poet's prayer has been answered. "In the day of Armageddon, at the last great fight of all," it has been proved that "our house stands together and the pillars do not fall." The Prussians always knew that at the touch of war the British Empire would rise. They were quite right. It has risen. But not precisely in the way they expected.

When the storm gathered, the Dominions said with one voice: "Whatever happens, we are with you." When it burst, they said: "Everything we have is yours."

Canada proposed sending an expeditionary force two days before war was declared. Australia put the Australian navy and 20,000 men at the complete disposal of the home government. New Zealand, five days before the war broke out, declared her intention to send her utmost quota of help in support of the Empire. South Africa at once assumed, and very brilliantly carried out, full responsibility for her own defense. Newfoundland engaged on the spot to meet all the local expenses of raising 1,000 men for the naval reserve.

MARVELOUS GIFTS FROM INDIA

As for India, a veritable tidal wave of loyalty and sacrifice swept from the Himalayas to Cape Comorin. The rulers of the native States, nearly 700 in all, offered the King-Emperor their personal services and their local resources. There are 27 States in India that maintain Imperial service troops. One and all of these corps were literally flung at the head of the Viceroy.

Money, jewelry, horses and camels and men poured in upon the government. The Dalai Lama of Tibet offered 1,000 troops. The chiefs of the frontier tribes pressed their services. Sir Pertab Singh, though in his seventieth year, would take no denial, and his spirit was the spirit of all the diverse millions in the dependency.

A vast competition ensued to see which State, which prince, could do most for the Empire. Faction ceased; grievances were put on one side; discontent was smothered. When the news came that the King-Emperor would use the valor of his Indian subjects, the whole peninsula rang with joy.

All this in the first month of the war. Soon the stream became a mighty torrent fed from every corner of the Empire. All the fruits of the earth, all the products of the factory, all the resources of public treasures and private purses, all the accessories of war that individual generosity could furnish, were lavished without stint upon the government in London.

Time and again the Colonial office had to refuse gifts that it felt would be putting too great a strain on the donors. From the seamstresses and market-women of the Bahamas, with their offerings of two or three shillings, to the Nizam of Hyderabad, with his initial gift of $2,000,000; from East African chiefs, with their contributions of bullocks and goats, to the millions forwarded in money and goods from the self-governing dominions—one common passion to give and spend swept through the Empire.

If it had been confined to men and women of British blood and origin, it would still have been wonderful enough; but what gave and gives it—for the tide still runs flood high—its preëminent significance is that the native rulers and peoples have been everywhere foremost in words and deeds. They hastened as one man to show their gratitude for what British justice and British government had done for them; and the more they knew of Prussian rule the more quickly they hastened.

Not in a thousand years could the Hohenzollerns earn such touching and unforced tributes of loyalty and affection as Sir Hugh Clifford on the Gold Coast and Sir Frederic D. Lugard in Nigeria—to mention but two instances—have been privileged to receive.

And what have the men of the dominions and of India achieved in the war? They have seized the German possessions in the Pacific; they have conquered Togoland and German Southwest Africa and the Cameroons; they hold virtually the whole of German East Africa in their grip; they made an end of the ***Emden;*** in Flanders and the Dardanelles, at the head of the Persian Gulf, in Egypt, in Arabia, and along the course of the Tigris and Euphrates, Indians and New Zealanders, Australians and Canadians, have shed their bravest blood.

Before the war is ended the Empire overseas will have thrown into the struggle well over 1,000,000 men, unsurpassed the world over in physique, intelligence, and the qualities of daring initiative.

It is a superb record. No Britisher can even think of it without a feeling of awe mingling with his pride. Far beyond any material strengthening, it has brought to the motherland the inspiration of the real sense of oneness that underlies all the peoples of the Empire.

This war will change many things; on the structure and machinery of the British Empire its mark will be indelible. No one after the experience of the first two and a half years can think it possible to maintain much longer the arrangement by which policies that affect the governments and peoples of the entire Empire and involve them in unlooked-for perils, sacrifices, and responsibilities are decided in London by the leaders of a single British political party, without any consultation whatever with the statesmen of the dominions. That is an anomaly which will have to go. But to uproot it means not merely to alter, but to revolutionize, the constitution of the British Empire.

AS IF AMERICA SHOULD RAISE 11,500,000 TROOPS

Meanwhile to make the rounds of any of the British fronts at any of the theaters of war is to view a microcosm of the Empire. It is, indeed, the climax to all our other services and achievements that we should have turned ourselves into a military power of the first order. People talk of Great Britain being slow to wake up to the realities of the war. So we were in some ways. But 2,000,000 men enlisted in the first year of the war, which seems to show a certain consciousness that at any rate something unusual was going on. And before conscription came into force in May of last year—that is, before the war was two years old—5,000,000 men, or more than 11 per cent of the total population of the British Isles, had volunteered.

If Americans will imagine themselves raising a volunteer army of 11,500,000 men—which is what they would have to do to parallel the British achievement—they will get some idea of the magnitude of what has been accomplished. Altogether it seems probable that at least 6,500,000, and possibly 7,000,000, men of the United Kingdom will have served with the colors before the war is over.

Our old army that formed the expeditionary force to France; that covered itself with credit during the retreat from Mons; that helped to save the French forces from being outflanked, and that barred the way to Calais against a German army that outnumbered it by more than four to one, was, I suppose, one of the most wonderful military instruments that has ever been fashioned.

A DEMOCRATIC ARMY

But it was a profession, a caste, apart. The new armies, however, are not a caste; they are the nation itself. They are drawn from every class and trade and profession in the Kingdom, and they proved conclusively on the Somme that they could beat the Germans at their own game.

They gave the German army such a mauling as seldom any army has ever received since warfare first began. The battle of the Somme was not only by far the biggest battle of the war; in duration, in the numbers engaged, and in the intensity of the artillery fire it was the biggest battle the world has yet seen. Some 750,000 of the enemy were put out of action before it ended. Our troops captured position after position, each one stronger than any the Germans have taken since the beginning of the war.

They made "the blood bath of the Somme" a name of terror throughout the fatherland, charged with horror no less deep than that of Verdun. They compelled the greatest retreat that it has so far fallen upon the German troops to execute. They pounded the heart out of them, and they have followed the enemy to his new lines with a definite conviction that they have at last the upper hand.

But our men who are thus helping to wear down the most formidable foe that has ever assaulted the freedom of Europe, who have captured Bagdad, and are contributing to end Turkish rule in Asia Minor; who have mopped up the German colonies, while preserving intact the integrity of all British possessions, and who are holding up their end in the difficult warfare of the Balkans—these men are something more than the backbone of Britain during the struggle. They will be its backbone also in the hardly less anxious years of peace. They will be the pivot of the new England that is being forged in the furnace of the war.

LESSONS OF THE WAR

And that new England is a very different country from the old one. A political democracy we have long been. A social democracy before the war we were not. But we are now. Some six or seven million men, as I have said, have mingled with one another; have learned to understand and sympathize with one another in the new armies; have been trained into an equal brotherhood in the severest school of courage, efficiency, and discipline; have had most of the nonsense of social distinctions knocked out of them.

Gone is the vicious consideration that wealth has always claimed and received in the plump security of the British Isles. Duke's son and cook's son are fighting shoulder to shoulder; great ladies do the waiting in the soldiers' refreshment buffets; work like sewing maids in the Red Cross arsenals; like factory hands in the munition works; a shop walker and a grocer's assistant wear the Victoria Cross—the new patent of nobility; for the convalescent wounded there is a boundless outpouring of hospitality and affection, free from the remotest tinge of condescension; the impulse to succor, to link hands, to know and understand one another, is universal.

We have learned from this war, and perhaps nothing else could have taught us, the nobility of sacrifice and of work.

We have learned the full meaning of citizenship. We are going through an ordeal that has called into play every faculty we possess, and that will leave us facing life sanely, distinguishing very sharply between its realities and its solemn plausibilities and a hundred times more efficient than we were for meeting all its emergencies.

You must not think of England as depressed. She is facing her task, she is bearing her titanic load, with a tenacity that is wonderfully serene. She is serene not only because she is confident of her power, but because she knows she is fighting for the noblest causes that ever summoned a nation to arms, and because she knows, with an equally passionate certainty of conviction, that honor and duty left her no alternative.

A NATION IN TRANSITION

Although nowadays in England there is little social life—people have no time in which to see anybody—and little travel, and practically no sport, and few opportunities and less inclination for amusement, and although we have to get along as best we can without servants, or with very few of them, without letters—everybody is too busy to write except to the men at the front — without motoring, without lights in the towns after dark, and without Paris fashions and dinner parties and balls, and although every morning there stares us in the face the ghastly list of the fallen and the wounded, still we are buoyed up by the knowledge that the cause, the great cause, is worth all sacrifices and all privations.

That is why we have gladly surrendered our most cherished liberties, turned our parliamentary system inside out, and submitted to a multitude of restrictions and inconveniences any one of which in the little days of peace would have started a rebellion.

Great Britain, that seemed so fixed, is now in transition; the foundations of its whole scheme of life are shifting, even if they are not breaking; habits and prejudices and old instinctive attitudes of mind are in process of dissolution; economic conditions that one thought were rooted in the deeps are made plastic and adjustable; and from this welter of renewal there is springing up an England strengthened by enormous sacrifices for great ideals, ennobled by poverty, disciplined without losing her characteristic flexibility and self-reliance, knowing more than a little of the true faith of social equality, and proud to have played once more, and not without honor, her historic rôle as the defender of the liberties of Europe.

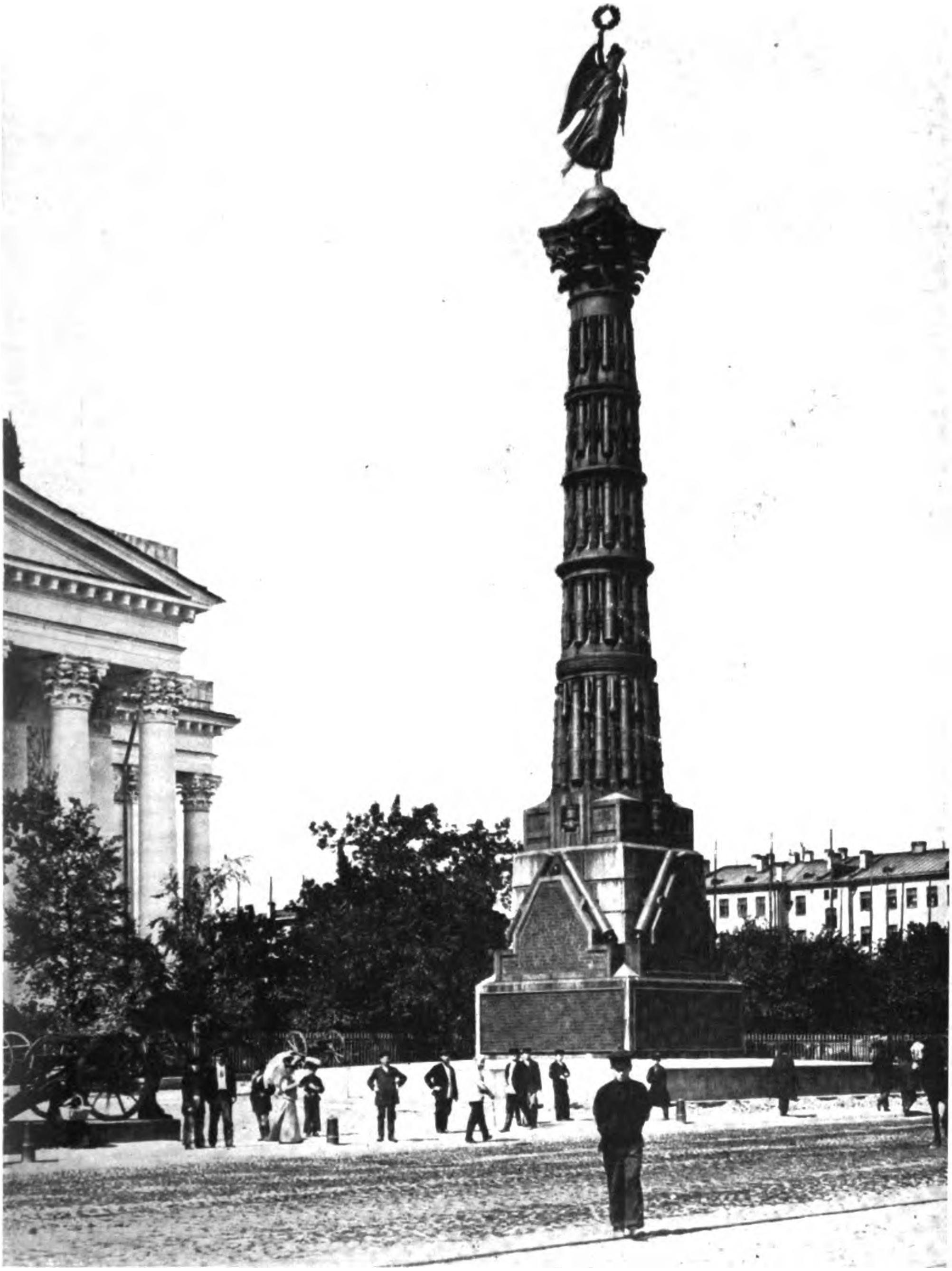
RUSSIA'S DEMOCRATS

By Montgomery Schuyler

THERE is nothing new under the sun. Recent events in Russia have not introduced an entirely new system of government into that great empire, but the revolution of the past few weeks, as we hastily but inaccurately call it, is in truth a reversal to an earlier form of democratic government in which the Russian people centuries ago had made great progress and in which they stood in the forefront of the European nations.

The leaders of thought in Russia today have not evolved a novelty, nor are they experimenting with a novelty; they have simply brought back to life the centuries old popular saying of the people in Russia: "If the prince is bad, into the mud with him."

We must admit, of course, that it has not been exactly the custom in the past few hundred years to act upon this saying in the case of rulers who had made themselves disliked by their subjects, but the underlying spirit was always there, waiting with infinite Russian patience for the men and the hour.



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THE MONUMENT OF FAME: PETROGRAD

In the square to the east of the Trinity Cathedral towers this cast-iron shaft surmounted by a bronze figure of Victory. The monument was erected in 1886 to commemorate the events of the Russo-Turkish War of 1877-1878. Five rows of captured Turkish cannon form the flutes of the Corinthian column and ten captured guns decorate the base. The adjacent cathedral occupies the site of the wooden chapel in which tradition says Peter the Great was married on a November night in 1707 to Catherine, the future empress.

Photograph from Boston Photo News Company

RUSSIAN CAVALRY ADVANCING AGAIN INTO AUSTRIAN TERRITORY

With the inability of the commissariat department of the Russian War Office to cope with the problems of provisioning troops in the early days of the European struggle, committees appointed by the *zemstvos* (local elective assemblies) began to provide for the comfort of the men during the mobilization period. Gradually but steadily these committees, which at first performed services similar to those rendered by the Red Cross and similar organizations in this country, took over every function of the quartermaster's department of the army and navy. This invaluable work, quietly and inconspicuously performed by the *zemstvos*, long the most liberal influences at work in Russia, has been more effective than [illegible] the new government with [illegible]

The whole social fabric of the early Slav was of a communal kind, but of a communism very different from that which afterward grew up embracing common property. Collectively the Slavs tilled the soil and carried on other occupations and collectively they lived in large timber houses.

It was an excellent system for the development of certain features of self-government; but in the troublous times in which it started, it was not sufficient to give any one collection of people a preponderance over other groups, and it was not suited to any great advance in civilization.

In time it was realized that some stronger and more centralized form of control was needed for the protection of the Slavs from their more warlike neighbors, the Asiatic tribes, by whom they were surrounded.

They took, then, voluntarily one of the most remarkable steps recorded by history, or at least vouched for by legend: they themselves called in to govern them two Scandinavian princes and a princess—Rurik, Igor, and Olga—and said to them, according to the story: "Our country is wide and fertile, but there is no order. Come and govern us."

Eventually these princes and their followers became the new aristocracy of the time, very much as happened in England with the Normans, who were, if we believe tradition, the same race of people.

The union of the two elements gave the people what they lacked and formed the beginnings of the Russian Empire of today, with their mixture of democratic ideas with perfunctory obedience to established rulers.

In the early days princes could not exact obedience against the wish of the people. Unpopular rulers were dismissed with scant ceremony in medieval Russia and, especially in the palmy days of Novgorod "the Great," there was a real self-governing republic in the heart of Russia.

THE TATAR CURSE

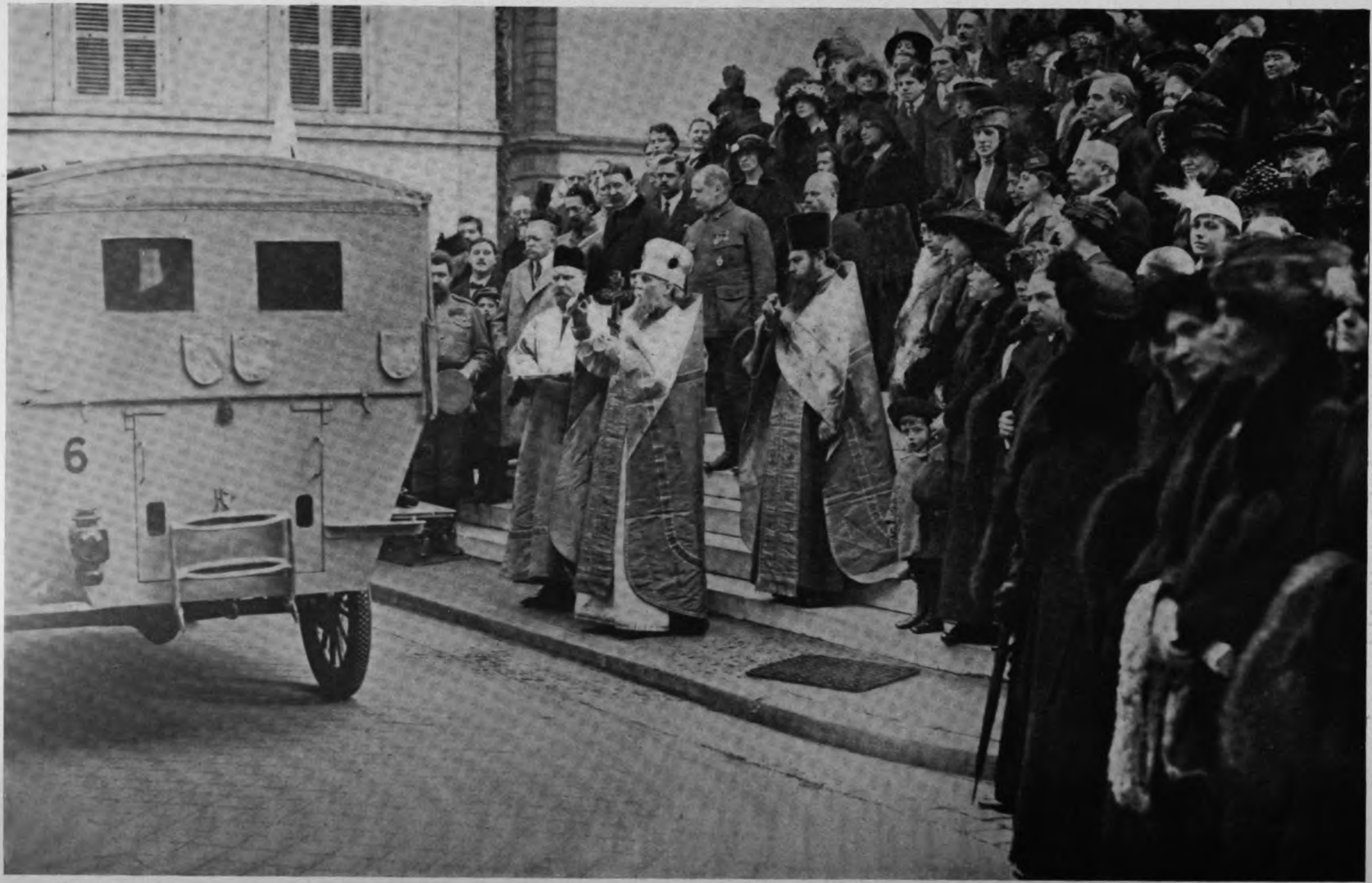
In spite of the new blood thus acquired and the traditions of democracy which were rapidly and widely developing from these factors, the geography of the country once more showed its power in influencing history. The Russian communities were spreading and scattering all over the plain, and while they were laying the foundations for future greatness of empire there was not sufficient cohesion among them to develop the broad unity of purpose which was to be found so necessary if these little States were to resist invasion.

For along with the growth of the principalities came the great vital fact which stands out and dominates everything else in the history of medieval Russia, namely, the later Tatar invasions and the gradual subjugation by them of the Russian princes. In another country the inhabitants could have retreated to mountain and desert regions and held off the newcomers for centuries.

But the peaceful and peace-loving Russians were in no condition to resist these formidable barbarians, who, under the celebrated Genghiz Khan and other leaders, rapidly overran Russia and in a comparatively short space of time had brought the whole country under their rule. The very nature of the loose and highly localized government of the princes was their undoing and they suffered by it for centuries, and in fact until they took a leaf from the conquerors' book and themselves built up the central power they needed.

We must therefore, I think, regard the Mongol invasions as the underlying cause of the development of the autocratic principle in Russia. They built up a superstructure of Oriental despotism and autocracy, which, in one form or another, has lasted in Russia until the present time.

Even in far-away times the Russian peasant was impatient of too much control over his personal liberty and his property, and when he was not strong enough to resist or powerful enough to drive out the offending prince he did the next best thing — disappeared himself, with all his belongings, and founded a new settlement elsewhere. This fact must be kept constantly in mind in any study of the reasons why the Tatars obtained and kept for so long such a hold upon the Russian principalities; the people and their rulers were not united by bonds



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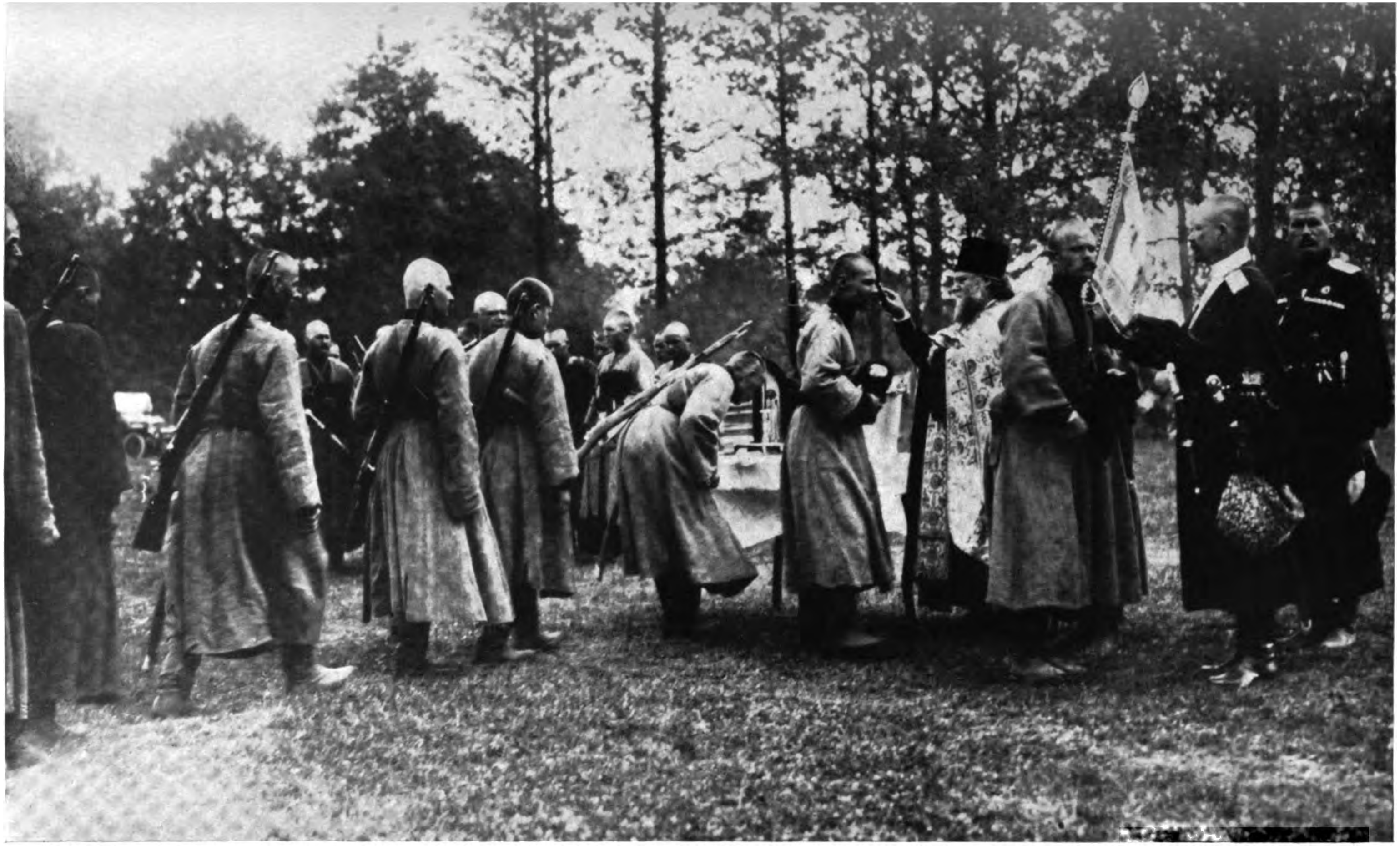
A PRELATE OF THE GREEK CHURCH BLESSING AN AUTOMOBILE AMBULANCE, THE GIFT OF RUSSIANS IN PARIS. THE CEREMONY TOOK PLACE IN THE PRESENCE OF THE RUSSIAN AMBASSADOR TO FRANCE



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PRIESTS OF THE GREEK CHURCH BESTOWING BLESSINGS ON RUSSIAN SOLDIERS AS AWARDS FOR VALOR

An interesting ceremony behind the Russian lines is this personal blessing bestowed by their priest on Russian soldiers who have distinguished themselves on the battlefield. The Russian soldier is devoted to his church, and the personal blessing by the priest is more valuable to him than any military decoration, even if bestowed by the Ruler himself.

sufficiently strong to make them fight against the invaders.

The peasants were originally holders of land and members of rural communes; they were constantly trying to maintain their rights of freedom of domicile and movement, but the princes and nobles were as constantly attempting to limit and nullify these rights, so that they might not be deprived of the services of the peasants on their lands.

In the reigns succeeding that of the terrible Ivan, the principles of autocracy replaced whatever forms of popular government there had been. The state of the small farmers and peasants slowly became worse and they degenerated into the position of appanages of the land on which they lived.

THE FIRST ROMANOFF WAS ELECTED TSAR BY AN ASSEMBLY

It is a curious fact, and one little appreciated now, that after some years of trouble and rebellion, Michael Romanoff, first Tsar of that name, was *elected* by an assembly. He did not succeed to the throne, nor had he any particular right to be chosen.

Once more for a time the Tatar teachings were forgotten in Russia to some extent and there was a partial return to the older methods.

The fact that Michael had been elected limited to some extent his autocratic powers, the more so as his election was the result of several compromises between the different factions of the nobles and courtiers, and he did not feel strong enough in the support of any one group to oppose the will of other cliques.

He, therefore, returned to the system of obtaining counsel and support from the people by means of "zemskii sobory," which were not exactly parliaments, but assemblies representing different districts and classes of society. In these conventions the greatest part was taken by the representatives of the middle classes. One result of these assemblies was the production of a new code of laws.

But Michael's successor, Alexis, suppressed them and put autocracy firmly on its feet, there to remain until the present day.

ABSOLUTISM WAS THEN NEEDED

However much we may regret the disappearance of popular government from Russia under the early Romanoff emperors, we must admit that it was necessary for the growth and expansion of the Empire. The Tatars probably never would have been driven out when they were under the old system of petty multitudes of principalities, each jealous of the other and intriguing against it at the court of the khans.

Absolutism at that stage of the world's development was needed for the firm control of an enormous territory such as was the Russian plain, which of itself formed no obstacle to foreign invasion and which tended to produce a uniformity of race and government.

Peter the Great could not have done what he did in bringing his country into the ranks of modern States if he had not had an autocratic form of government. He realized fully the influence of the army in establishing him firmly in the new absolutism, and in 1716, in his military statutes, he declared: "His Majesty is sovereign and autocrat. He is accountable to no one in the world."

From the time of Ivan the Terrible it was autocracy which, more than anything else, contributed to the long history of territorial extensions of Russia and her prestige, such as it was, abroad. In an endless cycle, territorial expansion led to political extension of this doctrine, and this to new territorial growth.

By the end of the reign of Peter an autocratic emperor was head of the nation, the church, and the army, and held absolutely in his own hands all spiritual and temporal power.

THE RESTORATION OF SELF-GOVERNMENT BEGUN

The famous Emancipation Act of the Emperor Alexander II in 1861 suddenly altered the status of the peasants and from a condition of practical slavery made them freemen once more.

It was soon found necessary to give them a certain share in local self-government and a somewhat complicated adjustment of this matter was arranged. There

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RUSSIAN OFFICERS TAKING TEA IN THEIR CASINO

When, by imperial rescript, Nicholas II put an end to the manufacture and sale of vodka, the national alcoholic beverage, there was much groaning among the 120,000,000 white Russians, but the effect was miraculously salutary, both upon the civilian population and the soldiers.

was a village council called the *volost;* this was composed solely of peasants and was a sort of development historically of the ancient *mir,* or commune, a survival of the old family rule. The *volost,* however, was soon seen to be inadequate and a larger unit, the *zemstvo,* was created by an imperial decree in 1864.

The best English translation of this word, perhaps, is "county council." It is an assembly of deputies from the *volosts,* to which are added a certain number of nobles, so that peasants and proprietors are seated together. Above the district zemstvo again are the provincial councils, consisting of chosen representatives of the lower councils.

This system worked fairly satisfactorily for a number of years and had made the beginning of self-government in parliamentary fashion once more in current use in Russia. In 1889, however, the government decided to have its own direct officers in each rural district, and for that purpose appointed *zemski natchalniki,* or rural overseers, to live in each district.

As these petty officials were appointed not by the people, but by the central administration, their presence was not welcome, and their interference with local affairs and their constant surveillance of the people brought about many conflicts with the local authorities. They were designed to be a sort of guardian for the peasants, on the theory that the latter were unfit to govern themselves, but in reality, of course, they were spies.

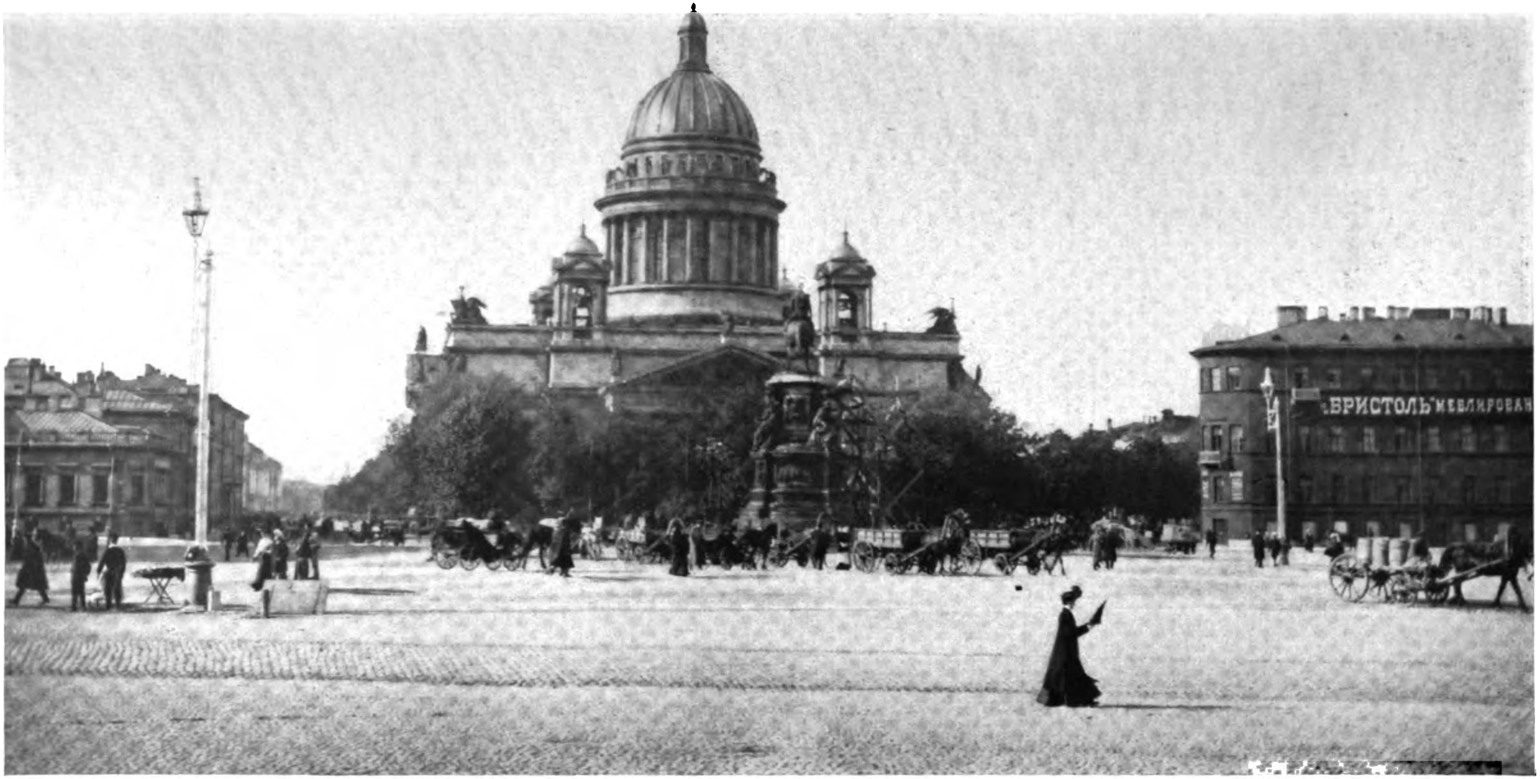
The legal economic status of the peasantry, it must be remembered, is that of a minor not fully competent as yet to manage his own business or private affairs.

The decision, however, that the peasants of Russia were not capable of self-government, even in the ordinary affairs of the community, while convenient for the bureaucracy, was not very successful as a way out of the practical difficulties

Photograph from J. C. Grew

THE CATHEDRAL OF ST. ISAAC: PETROGRAD

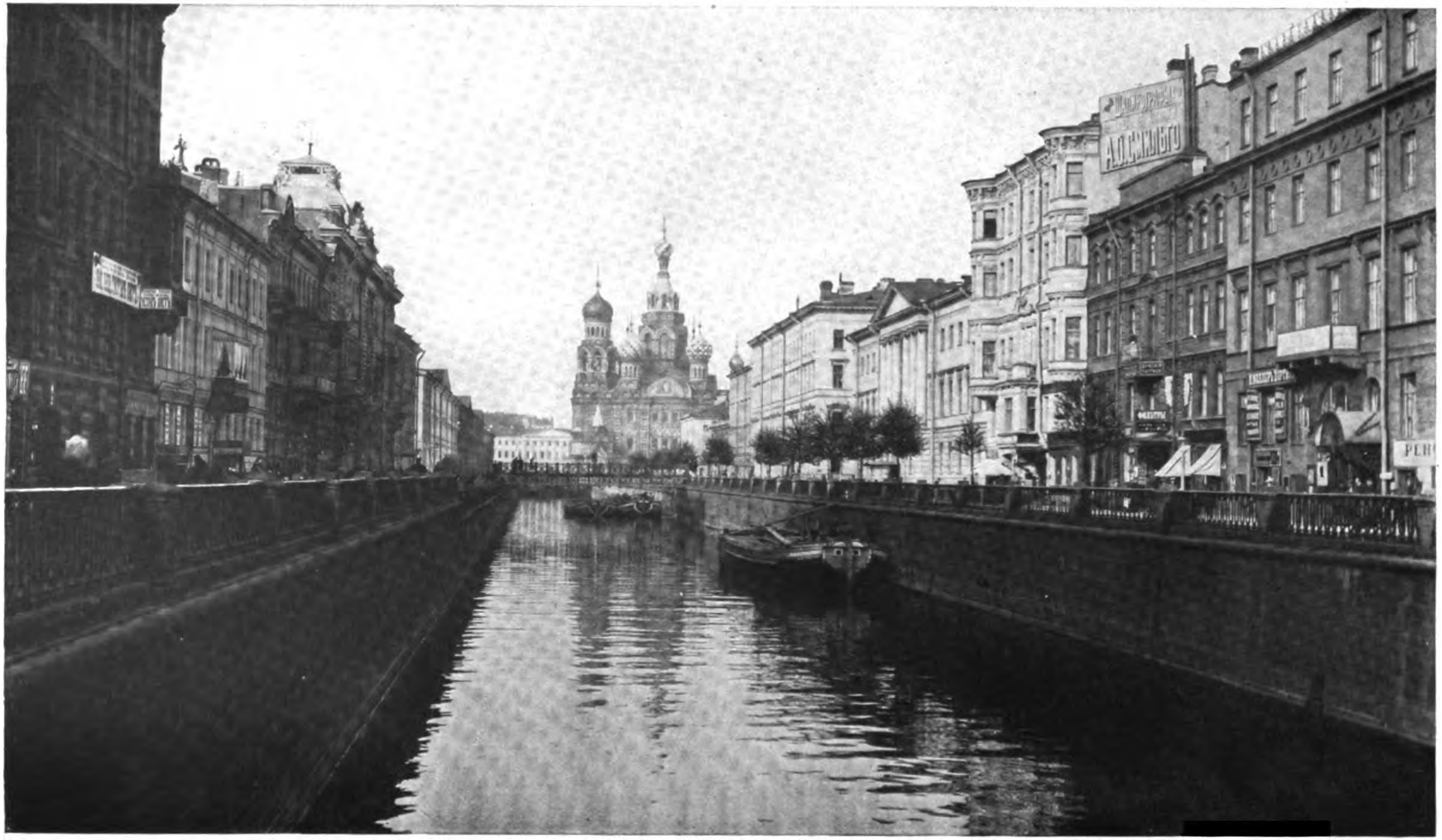
The magnificent gilded dome of this the largest church in the Russian capital is one of the most impressive landmarks of the great city on the Neva. It was begun in 1819 and completed in 1858 from plans prepared by the French architect, Ricard de Monferrand. The inner height of the great center dome is 260 feet, 44 feet greater than that of St. Paul's in London. Built of granite and marble, the structure cost more than 23,000,000 rubles ($11,750,000). The Senate Building is seen to the right.



Photograph from J. C. Grew

VIEW OF ST. ISAAC'S CATHEDRAL AND MONUMENT OF EMPEROR NICHOLAS I

To the south of this great religious edifice, which is built in the shape of a cross, 364 feet long and 315 feet wide, is Marie Square, in which stands an equestrian statue of Nicholas I, the "Iron Tsar," who at the outbreak of the Crimean War relied upon "Generals January and February" as his best allies against the French, English, Sardinians, and Turks. At the corners of the statue are figures of Justice, Wisdom, Strength, and Faith—sculptured portraits of the Tsar's wife and daughters.



Photograph from J. C. Grew

EKATERINSKAYA CANAL AND THE CHURCH OF THE RESURRECTION, BUILT IN MEMORY OF ALEXANDER II, ON THE SPOT WHERE HE WAS ASSASSINATED

This, one of the four drainage canals of the fashionable quarter of the Russian capital, is faced by many important structures, including the Kazan Cathedral and the Imperial Bank. In the central background is seen the many-domed Church of the Resurrection, erected over the spot where Tsar Alexander II was assassinated. The canal follows a meandering course, but in the main runs parallel to the Great Neva, into which its waters flow at both ends.

arising from the making of freemen out of serfs in such enormous numbers.

BUT THE PEOPLE'S GREATEST NEED—EDUCATION—WAS DENIED

What the great mass of the Russian people needed and what should have been put into execution as soon as the emancipation of the serfs was effected was a system of popular education embracing the whole people, in the course of which they should have received the instruction necessary for their first attempts to resume any self-government on the new scale.

Had this course been at once followed and continued until the present time, it is very doubtful if Russia would have had on her hands the terrible tragedies which followed the emancipation.

The government seemed to be afraid to give the common people any education, even to the extent of allowing them to read and write. It thought, apparently, that with education would come dissatisfaction with the existing form of government, and that with dissatisfaction would come some attempt to bring about reforms.

So the bureaucracy adopted the old expedient of burying its head in the sand and in refusing knowledge to the people. This was naturally only partially successful. Education in schools might be lacking, but it was impossible to keep a hundred and fifty million human beings permanently in the dark and without knowledge as to how the rest of the world was living and progressing.

The Russian peasants may be illiterate, as, indeed, according to statistics, about 70 per cent of them are, but they have the shrewd intelligence of the peasant all over the world, and their sturdy common sense makes up for lack of schooling to a great extent.

Thus, in spite of all opposition, the rural and urban assemblies retained the germ of local government, and in spite of the dual control, as the result of which much of their influence was nullified, they did have a certain value in airing abuses and suggesting improvements. Their existence was often threatened, but never entirely stopped.

Note, however, that there was no national congress or assembly of any kind from the eighteenth century down to the foundation of the new Imperial Duma, in 1906.

THE FIRST NATIONAL CONGRESS IN 280 YEARS

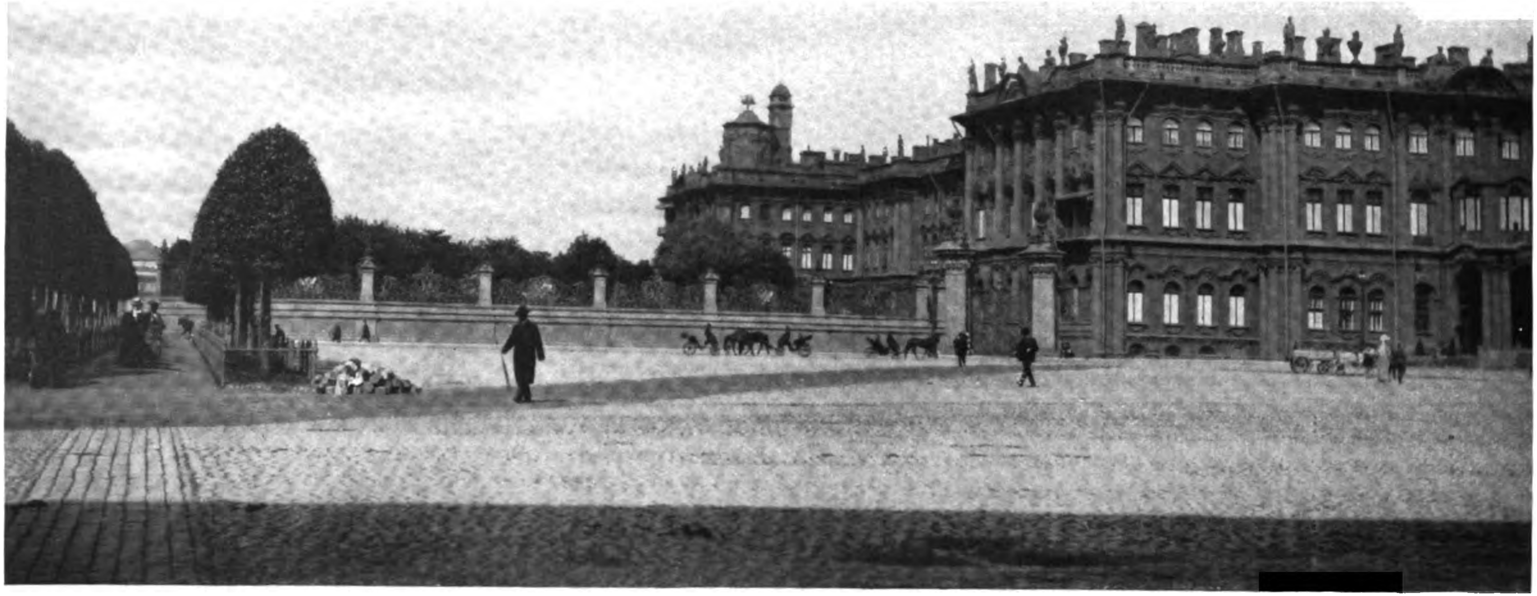
The members of this body were to be chosen by electors from all over the country. The new law gave the suffrage to every man over 25 years of age who had a fixed domicile and a certain property qualification. In rural districts those peasants had votes who were fathers of families, together with the rural landowners, nobles, merchants, and members of the clergy; in the cities, State officials, members of the public services, and proprietors with certain qualifications. Industrial workers who could prove six months' continuous labor in establishments having at least fifty employees could also vote.

The Duma could express views, but was nearly helpless in carrying into effect any reforms. But it had a certain influence for good in its very existence, and after a succession of abortive sessions, the later assemblies developed a courage which was truly remarkable when the forces opposed to it are considered.

It is not too much to say, in the light of recent events, that the Duma and what it stands for is responsible directly and primarily for the overthrow of the Romanoff dynasty and the establishment of a new form of government in Russia.

The reason for the failure of the revolutionary movement which convulsed Russia in the years immediately succeeding the Russo-Japanese War is that the methods were too radical and too reminiscent of the old nihilism to be popular, even with the milder groups of revolutionists.

The arguments of that time consisted in bombs thrown at unpopular ministers or officials who, although not disliked personally, were supposed to embody the principles of the autocratic régime too closely. It is doubtful if these enthusiasts ever had the support of any large element of the Russian population out-



Photograph from J. C. Grew

CORNER OF THE WINTER PALACE: PETROGRAD

Since the completion of this royal residence under the direction of Catherine the Great it has been the winter home of the reigning autocrat of Russia. It was finished more than 150 years ago, but was partly destroyed by fire during the second quarter of the nineteenth century. Facing the River Neva, it spreads over more than four acres of ground. On the west side is a garden laid out by the recently deposed monarch.

side of the acknowledged "advanced" visionaries.

The leaders of the movements of 1905 and the succeeding years were men whose abilities and whose methods in no way held the confidence either of the middle classes or the peasants.

In fact, what with the devotion of the peasant to the "Little Father" as typifying the supreme head of Church and State, and his innate distrust of all strangers, it had never been possible for the revolutionists to get any wide support among the lower classes. In many cases the transplanted peasants who made up the industrial classes in the cities had quite openly taken that side, but industrialism as opposed to agriculture had never enough votaries to make their support effective.

The riots and general disturbances of 1905 were largely confined to the cities and to workers on the various railways who had been in sufficiently close touch with urban life to make them quicker to feel the need of change and progress.

THE PRESENT LEADERS ARE FAR-SIGHTED

The leaders of the new movement, however, have learned their lesson. Instead of sporadic instances of terrorism, followed by violence, they have entered upon a campaign of education, carried out systematically and with restraint, for the purpose of having all the people with them when the opportune time to strike should come.

They eagerly seized the opportunity of the war and its consequent needs to illustrate in a practical way how much better they could manage things if given the power, and the Russian, who may be slow, but who is not dull, has learned the lesson so graphically put before him.

It is, of course, too soon after the stirring events of the last few weeks to estimate with any degree of accuracy just what result the overthrowing of absolutism will have on the future of the Russian people. The peasants—that is, of course, the vast majority of the inhabitants of the Empire—have, since the emancipation, been singularly indifferent to their government except in the way of interest in the whole agrarian question.

If the dynasty and the bureaucracy had seen fit to give the peasants a satisfactory solution of the problems arising from land ownership, as they so easily could have done, I doubt greatly if there would have been any revolution at the present time.

Even a fairly good rule would have satisfied these simple people. The limited amount of self-government they enjoyed in the rural assemblies, hampered though it was, was enough for the most pressing questions of local interest.

These assemblies, however, naturally had no authority to dig down to the root of the peasants' grievances—the unequal distribution of land and the lack of any just system for adjusting complaints thereon—and could not on that account be considered satisfactory.

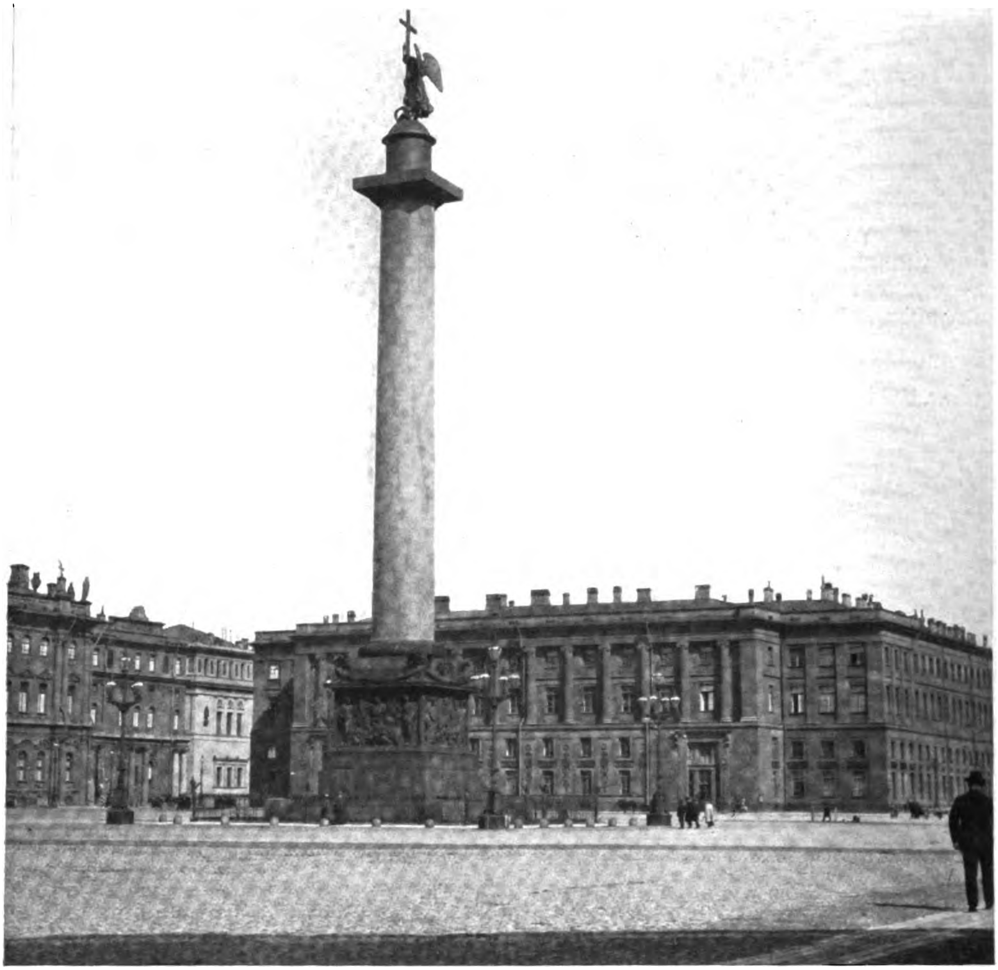
What undoubtedly had more effect than anything else in influencing the peasant favorably toward the new government and against the old was the fact that shortly after the beginning of the present war it was seen that the regular commissariat department of the War Office was quite unequal to carrying out the tasks imposed by the mobilization of the millions of men called to the colors in Russia, namely, of provisioning, clothing, and transporting the men according to requirements.

ASSOCIATIONS OF THE PEOPLE

The first mobilization was carried out in 1914, in the summer-time, and did not entail any great amount of physical hardship on the recruits. When the winter of that year had arrived, however, and the cold had made transportation difficult, the suffering was great.

In many cases troops had to be sent several weeks' journey by rail in unheated freight cars, without any conveniences, and if it had not been for the splendid work of the zemstvo committees thousands would have frozen and starved.

Each local assembly, both in city and country, formed special committees, as they had done in the Japanese war, and, working with that perfect spirit of cooperation which distinguishes Russians of every walk in life when interested in any common object, they rapidly and



Photograph from J. C. Grew

THE BIGGEST MONOLITH OF OUR TIMES—THE ALEXANDER COLUMN: PETROGRAD

In the center of the Dvortzovaya Square, before the Winter Palace, towers this huge pillar of polished red Finnish granite, nearly 100 feet high and 13 feet in diameter. The height of the whole monument, including the bronze angel clasping a 20-foot cross, is 153½ feet. It was erected in 1834 by Tsar Nicholas I to the memory of his brother, Alexander I. On the side facing the Winter Palace is the inscription, "Grateful Russia to Alexander I."

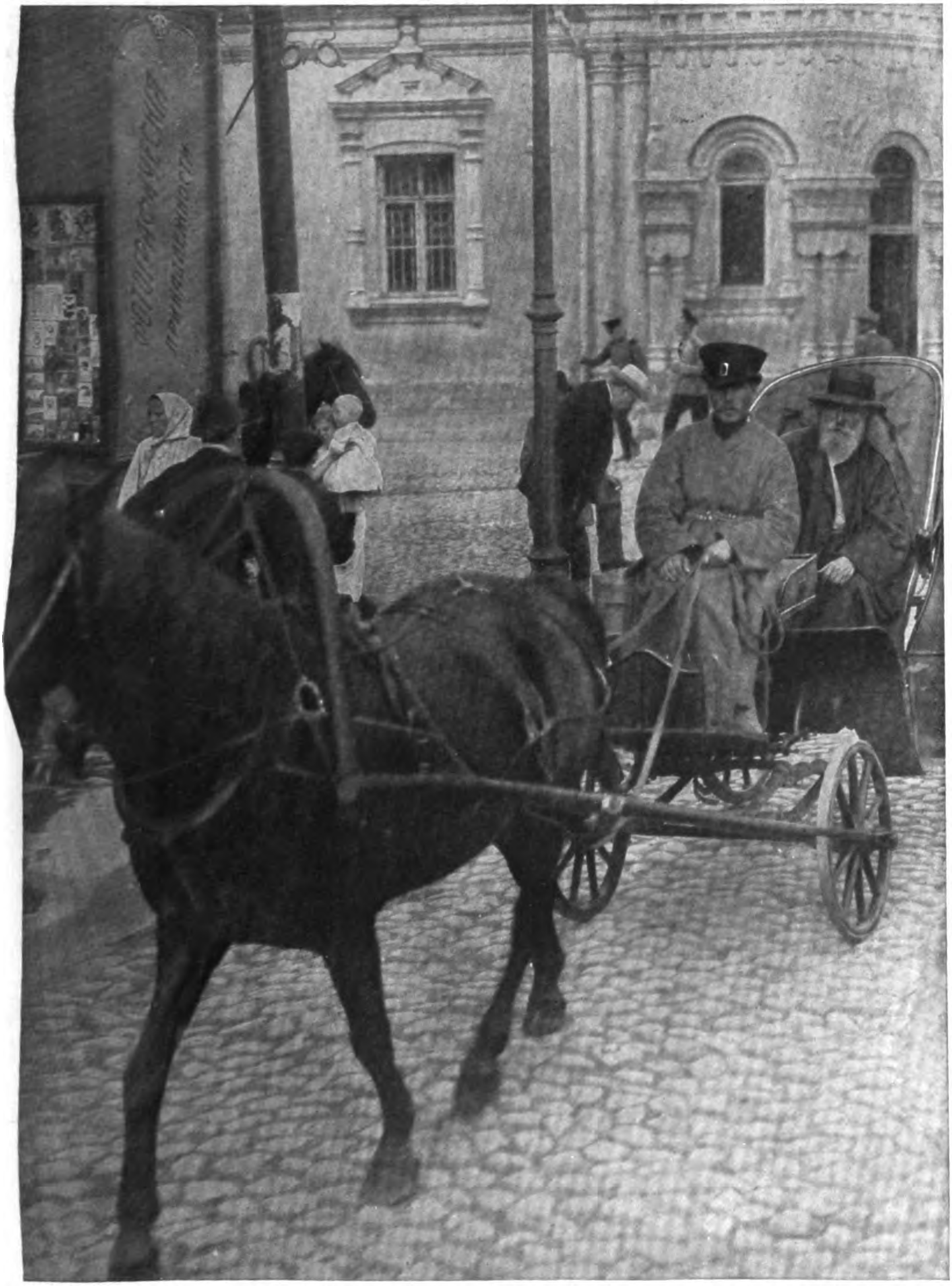
energetically took over practically the whole task of providing food and other needed supplies for the soldiers.

Booths were established at railway stations where the men could get bread and hot tea on the arrival of the troop trains; nurses and doctors were on hand to look after any who might need their services, and a whole system of first aid was soon in effect.

Soon it was found necessary for these committees to take up the question of buying supplies in quantity and in transporting these supplies to where they were needed. This was followed by the organization of boot and clothing factories, help in munition works, and gradually, but steadily, the zemstva took over practically every function of the quartermaster's department of the army and navy.

THE DISAPPEARANCE OF THE DRUNKARD

Another phase, and one perhaps as important, if not more so, than the develop-



Photograph by Gilbert H. Grosvenor

A STREET SCENE IN MOSCOW, RUSSIA

The low-hung, single-passenger vehicle, with its ponderously yoked horse, is as typical of Russia as is the howdah-equipped elephant of India or the man-power jinrikisha of Japan. Carriages for infant Russia are not in universal use, however, as evidenced by the little mother in the picture with her arms full of baby.

AFTERNOON TEA IN RUSSIA

The popularity of the cup which cheers but does not inebriate has increased enormously since vodka went out of fashion. Another favorite table beverage of the Russians is kvass. the liquor drawn off soaked black bread or white bread.

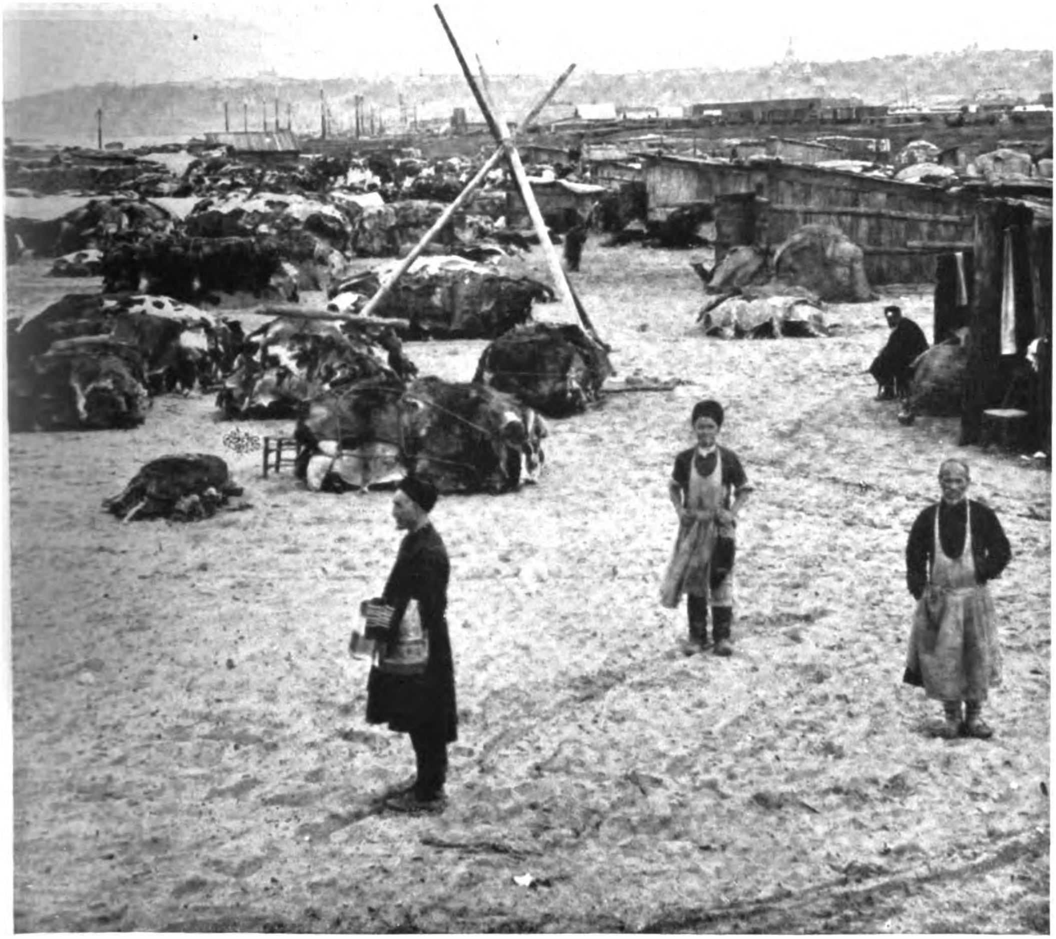
ment of popular aid to the military forces of the country, is the immense expansion of the already existing coöperative societies since the beginning of the war. This growth is very closely connected with the abolition of vodka and the consequent entire sobriety of the whole nation for a period which is already of nearly three years' duration.

Strong drink had always been the one absolutely essential thing for the peasant. Whatever else he lacked, he must have his drunken spree once in so often, and no obligation, no duty, and no work ever interfered with the far more important task of periodically getting drunk.

As each spree took at least three days' time—one day to get drunk, one to lie drunk, and one to recover his senses—the working time of the average peasant was greatly diminished. To this was added the due observance of all State and Church holidays and anniversaries, and also bad weather, so that in all probability 150 days would be a large labor average for a year.

When the Emperor "by a stroke of the pen," as is so often said, wiped out the great curse of drink from the people, he not only added greatly to their economic forces, but to their military fitness. It is now widely felt that one of the most potent reasons for the ill-success of the Russian arms in the Japanese war was the constant state of intoxication of so many of the officers and men.

With the ending of vodka, however, a great deal of spare time was thrown on the people. Drinking was one of the chief amusements of millions of men who could neither read nor write, and if disorders, if the mischief which Satan always finds for idle hands, was to be avoided, something must be substituted in the way of clean and healthful recreation.



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SIBERIAN HIDES AND VILLAGE OF THE TATARS: NIZHNI-NOVGOROD, RUSSIA

Live-stock breeding is second to agriculture as a pursuit among the inhabitants of Siberia, a region one and a half times as large as all Europe and forty times larger than the British Isles.

It must be remembered that, as a result of the dislike of the authorities for all assemblies of people, no matter of how innocent a character, there had been practically no lectures, concerts, theaters, or other forms of pastime, if we except the excellent military band concerts in the public parks on summer evenings.

One of the first cares of the coöperative societies, with their millions of members, after the abolition of drink was to get up diversions for the neighborhood, which were usually held in the lofts over the coöperative stores or warehouses in the villages. Cinematographs, amateur theatricals, concerts, and other community activities were started and had great success.

The money once spent for drink now stays in the peasants' pockets or is put in the rural branches of the government savings bank, and the total deposits of that institution have swelled incredibly in the past two years.

GROWTH OF THE PEOPLE'S ASSOCIATIONS IS PHENOMENAL

The growth of these coöperative societies has been phenomenal. For instance, in one district alone the number has been increased from 50 to 302. The societies for wholesale purchase have increased from 40 to 400.

There are now 60 credit unions working, with some 10,000 separate coöperative credit societies. In Moscow there has been organized a Central Coöperative Credit Bank, which in 1915 did a business of $140,000,000.

It is impossible to imagine how widespread have become the ramifications of these unions and societies. There are now building or in operation flour mills, oil works, starch works, paper and sugar plants, and machine shops. In one town we have an electric-light plant, giving people light for a dollar a year.

There is no doubt that in thus helping their members to the number of millions these societies have in no small degree contributed to the military successes of Russia, for in every instance they can be found working in close harmony with the committees of the zemstvos engaged in the buying and furnishing of the enormous quantities of supplies needed by the armies.

Under the leadership of devoted and able administrators, the numberless committees appointed by the various zemstvos have been untiring in reaching out for new fields of activity, and only the suspicion and jealousy of the official classes has prevented them from turning Russia into one great communistic settlement.

The catalogue of the work undertaken and carried to success by these committees would be long and meaningless. Some of the more interesting of these phases, however, may properly be touched upon.

Let us take, for example, almost any point on any railroad leading from the interior to the fighting front of Russia at the present time. As you emerge from your railroad car at the station, you probably see on a switch in the yard a long train of cars painted gray, with big, red crosses on the sides, and, on looking closer, you can read, "Hospital train for active army service of the . . . Zemstvo." Into this train stretcher-bearers are carrying wounded men from motor ambulances outside the station, similarly marked, which have just come in from the temporary hospitals established by the same committee just behind the lines of trenches.

IN COÖPERATIVE EFFORT RUSSIA CAN TEACH US MUCH

Nurses, orderlies, doctors, medicines, and dressings—all are provided by these same units and without expense to the government. In each city, town, and village women are organized into groups—sewing, making bandages, knitting warm sleeping things, or doing something else useful—much as they are in all the other belligerent countries, but with a far greater degree of coördination and less of confusion and duplication of effort than is to be found anywhere else.

In a country so singularly inefficient as Russia is in many ways, there is yet much for us to learn in the way of coöperative effort and aid.

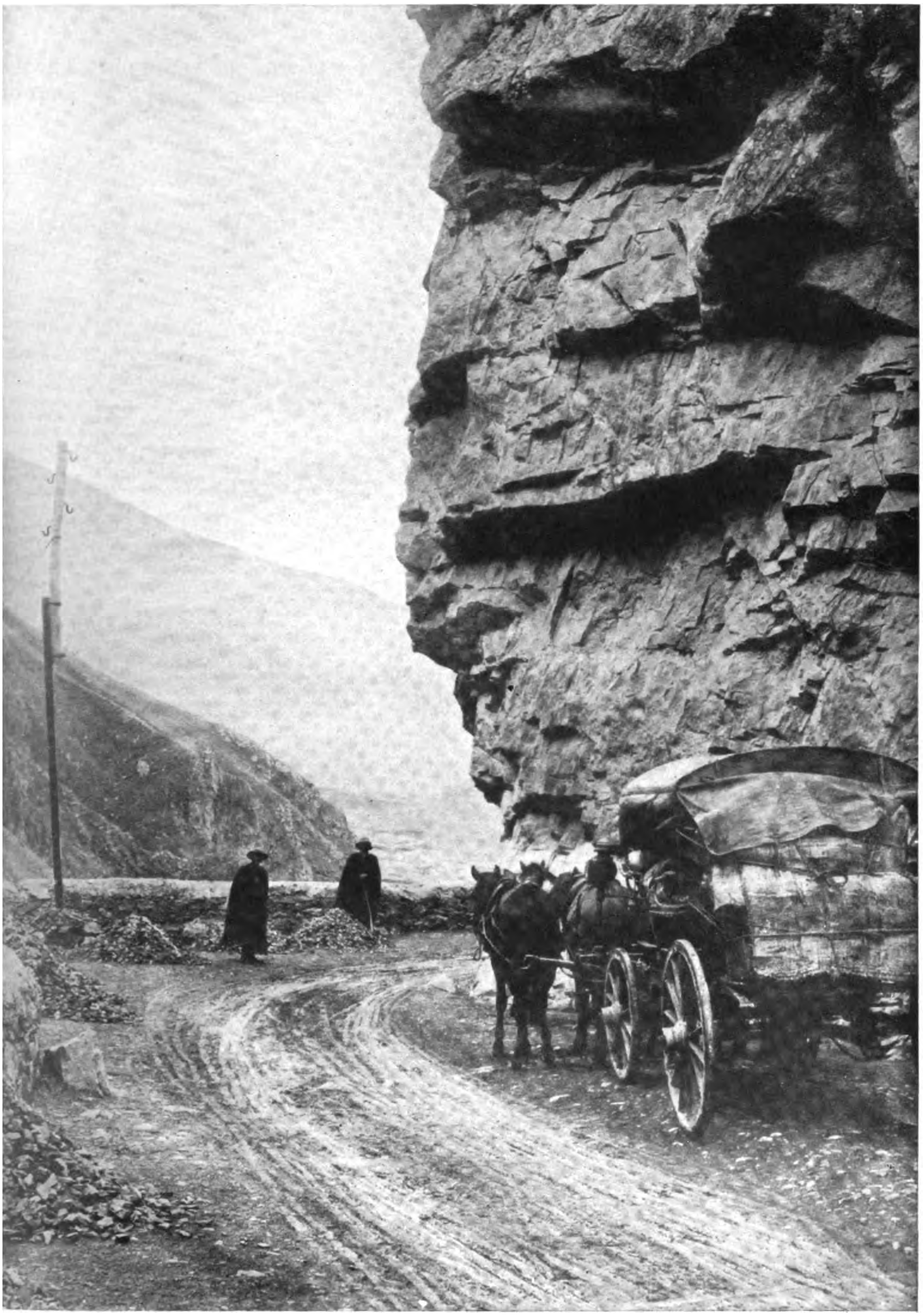
One of the most interesting private institutions, which works along the same lines as do the committees just described, is what is known as "Purushkevitch Points." Mr. Purushkevitch has been a member of several of the Dumas, and at the beginning of the war organized at his own expense a number of "points."

I visited and made a thorough inspection of a "point," situated not far from the city of Dvinsk, on the northern front of Russia. We started out in a fast American automobile and, after going as far as was thought safe for the car toward the front-line trenches, we left it and proceeded on foot to the point. This was a settlement some couple of miles behind the front trenches.

A Sister of Mercy was in general charge of the whole work. Under her were three doctors—men too old for the active work at the front, but quite ready to perform any minor operations or give any necessary dressings or other aid. They had a well-equipped hospital in a tent surmounted by a large Red Cross flag.

Other tents were dining, dressing, and sleeping rooms, and still others contained supplies and quarters for the large staff of orderlies and attendants.

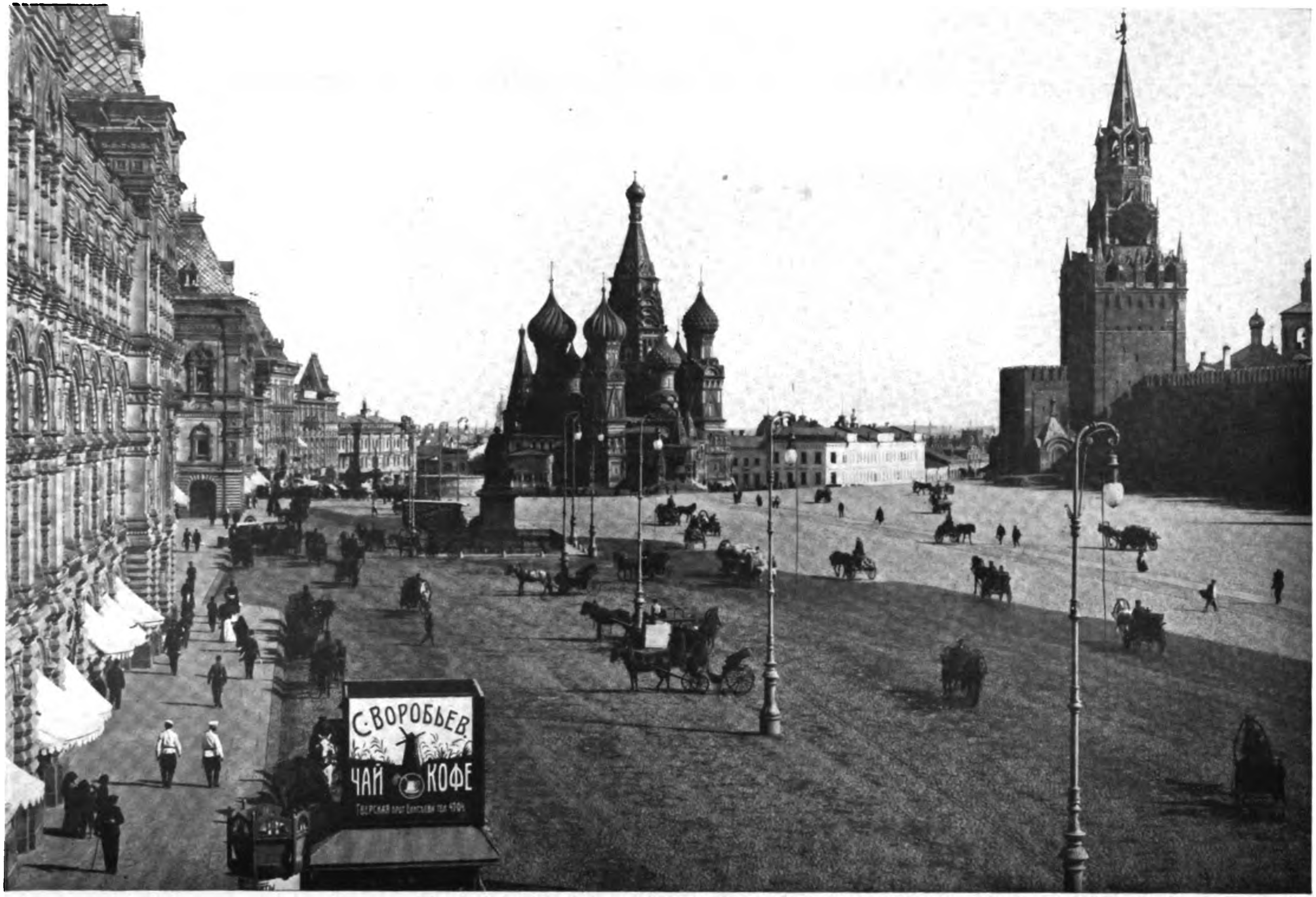
The sister in charge told me that there



Photograph from Boston Photo News Company

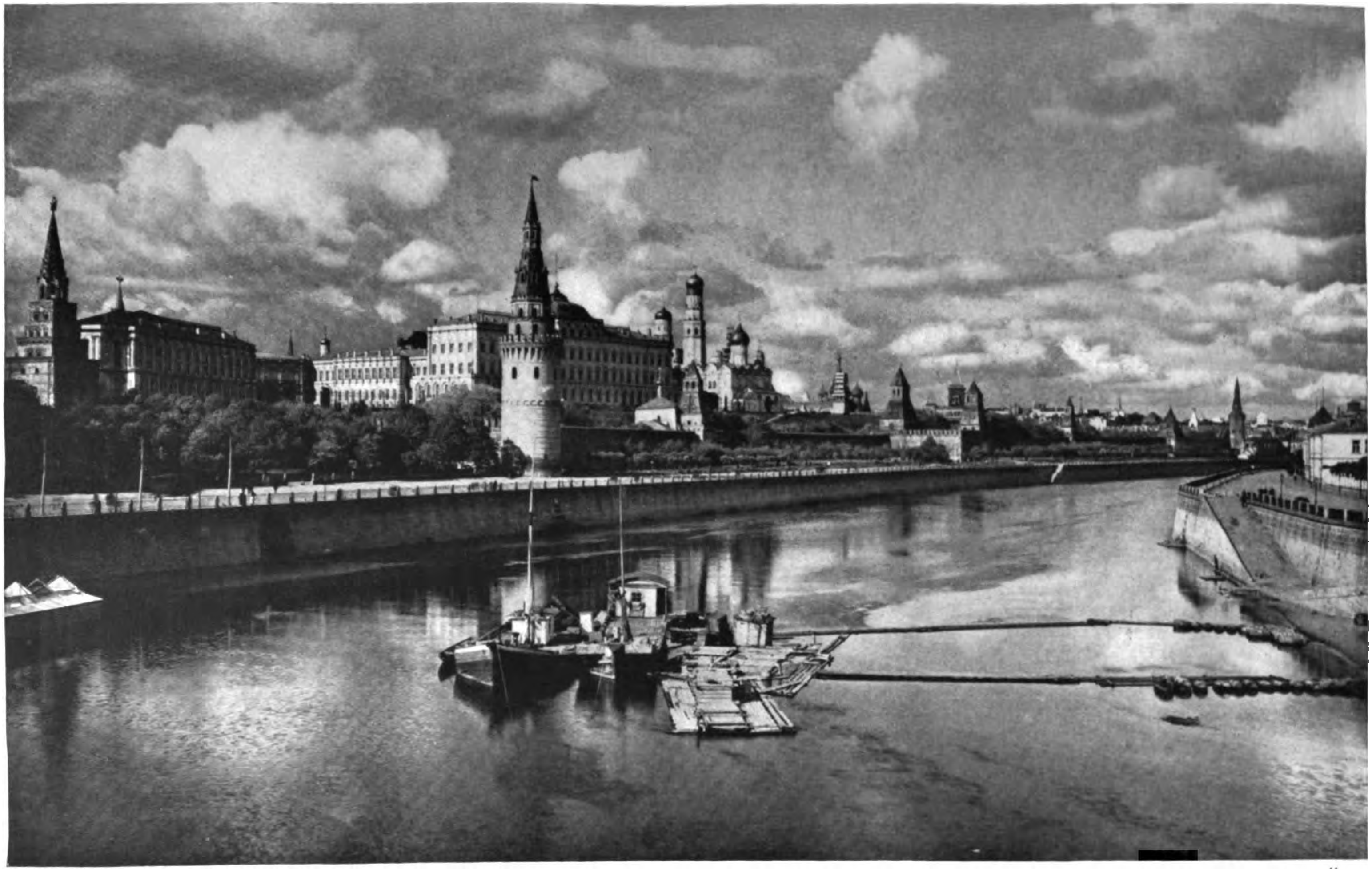
THE GEORGIAN MILITARY ROAD OVER THE CAUCASUS

This great highway, over which motor omnibuses are operated regularly in peace times for six months of the year (April 15 to October 15), is one of the most beautiful mountain roads in the world. It ascends the valley of the Terek and crosses the Krestovaya Pass at an elevation of 7,800 feet, then descends to the famous city of Tiflis. It was under construction for more than half a century, being completed in 1864. For a distance of eight miles the road runs through an awe-inspiring gorge, flanked by precipitous walls of rock more than a mile high.



THE RED SQUARE: MOSCOW

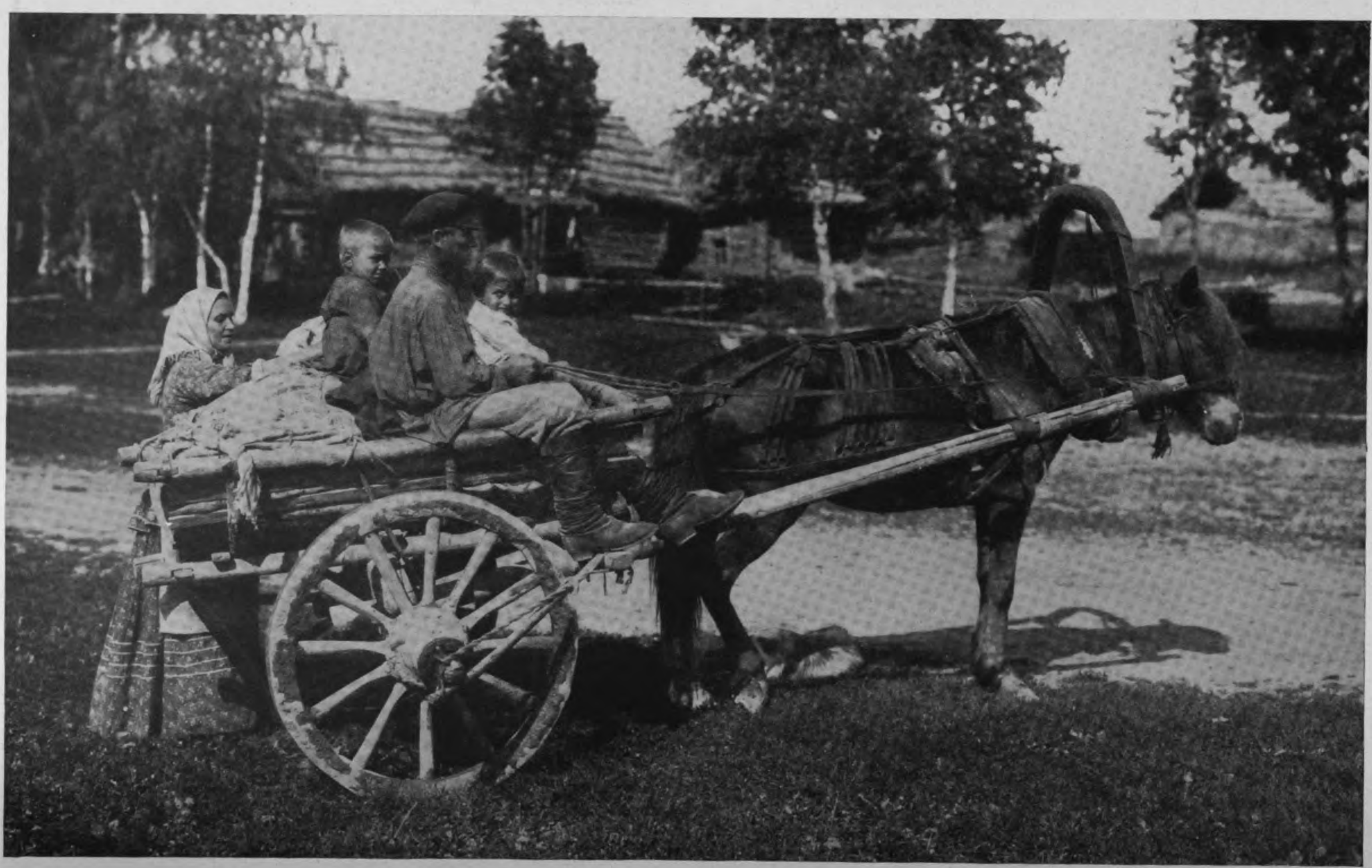
Lying between the Kremlin and the Inner City, this great space in the heart of Moscow has an area of more than thirty acres. To the right is seen a part of the battlemented wall of the Kremlin. In the center of the picture is the unforgettable Cathedral of St. Basil. To the left may be seen a portion of the front façade of the famous Trading Rows, erected at a cost of nearly $8,000,000 (including the site), for wholesale and retail shops and offices. The Historical Museum and the Kazan Cathedral bound the square on the fourth (north) side.



Photograph by H. S. Cresswell

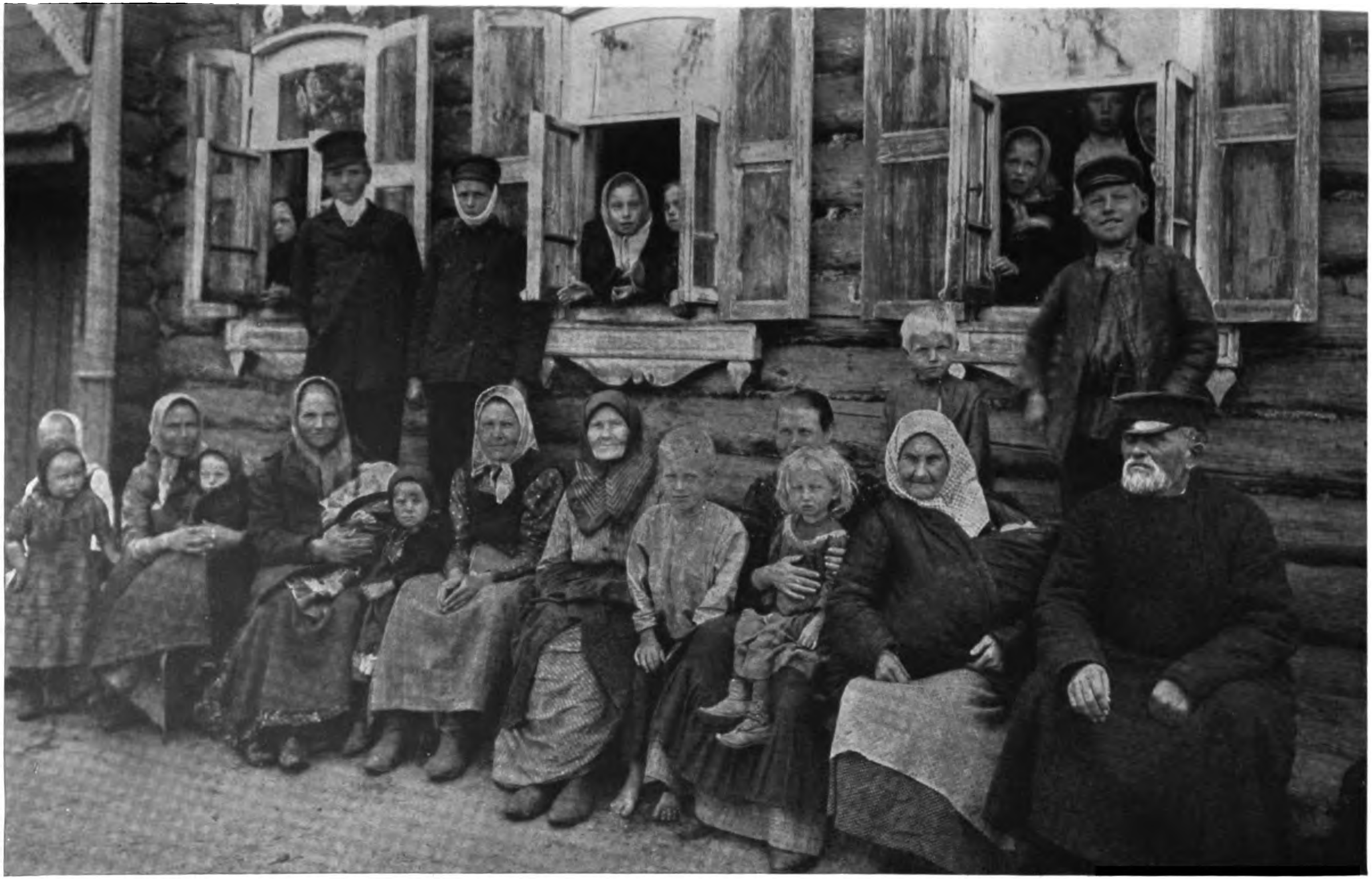
VIEW OF THE KREMLIN FROM THE BRIDGE OPPOSITE THE CATHEDRAL OF OUR SAVIOUR: MOSCOW

This ancient, fortress-like triangle, occupying an entire quarter of Russia's second city and medieval capital, is the historic center and sacred shrine, the very heart of the great Slav empire. The palace of the Tsar, surrounded by government buildings and churches, is girded by a battlemented brick wall a mile and a quarter in circumference and 65 feet high. Nineteen towers stud this wall and five great gates afford access to the conglomerate mass of buildings which constitute a great nation's treasure-house of sacred, historic, and romantic associations. The Kremlin is to Russia what the Roman Forum and St. Peter's combined are to Italy.



A RUSSIAN PEASANT FAMILY AND TEAM

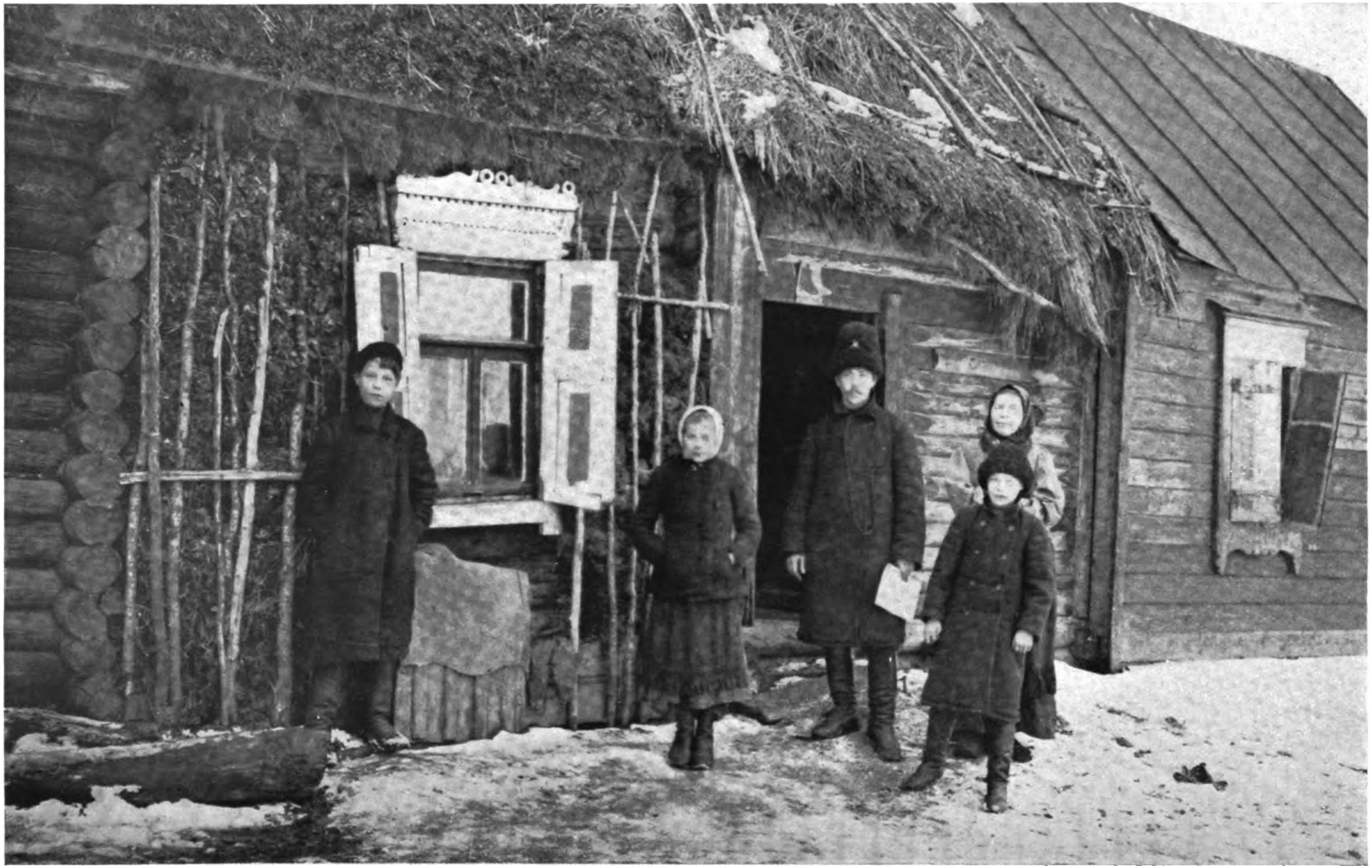
The good-roads movement has not yet reached the great Slav empire, which embraces one-sixth of the landed area of the globe. The highways, as a whole, are tortuously rough and in certain seasons almost impassably muddy, so that the carts of the peasants must be designed to resist heavy strains. The large wooden yoke is universal in Russia.



Photograph from H. S. Cresswell

A FAMILY GROUP IN A SMALL MANUFACTURING SUBURB NEAR MOSCOW

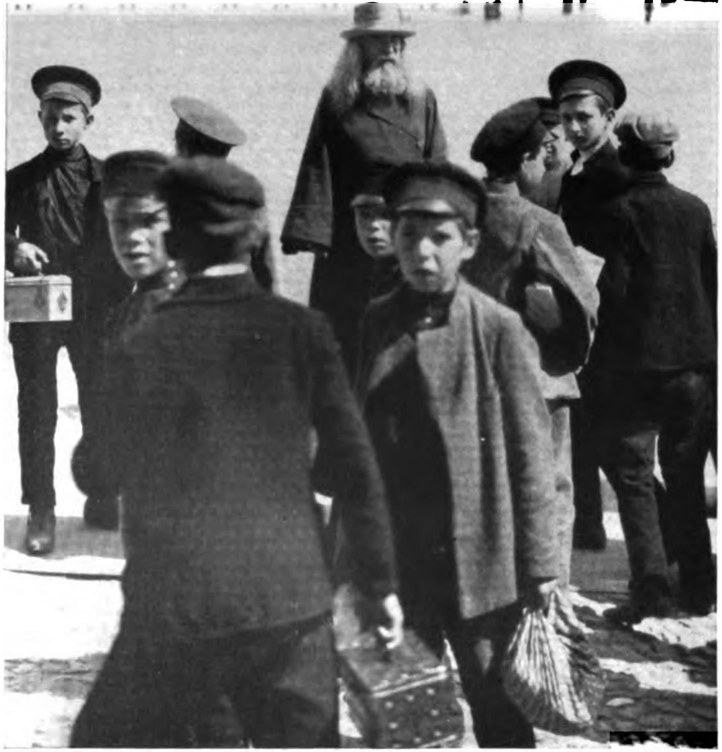
While it would, perhaps, be an exaggeration to speak of this as a "typical" Russian household, large families are the rule in the Muscovite empire. In spite of a high mortality rate, the excess of births over deaths is greater here than in any other leading country. The population increased 100 per cent in the forty years between 1872 and 1912.



Photograph from H. S. Cresswell

THE HOUSE OF A RUSSIAN VILLAGE POSTMAN, NEAR MOSCOW

There is no rural free delivery in Russia. In the country districts the addressees are required to call for their own letters at the nearest post-office or railway station. Restaurants, hotels, and shops, as a rule, charge a commission on postage stamps. One of the peculiar rules of the Russian postal service has been that letters containing money are liable to confiscation unless a declaration is made before mailing by the sender. Notice shoe sign over door, showing that a man lives inside who can repair and make shoes.



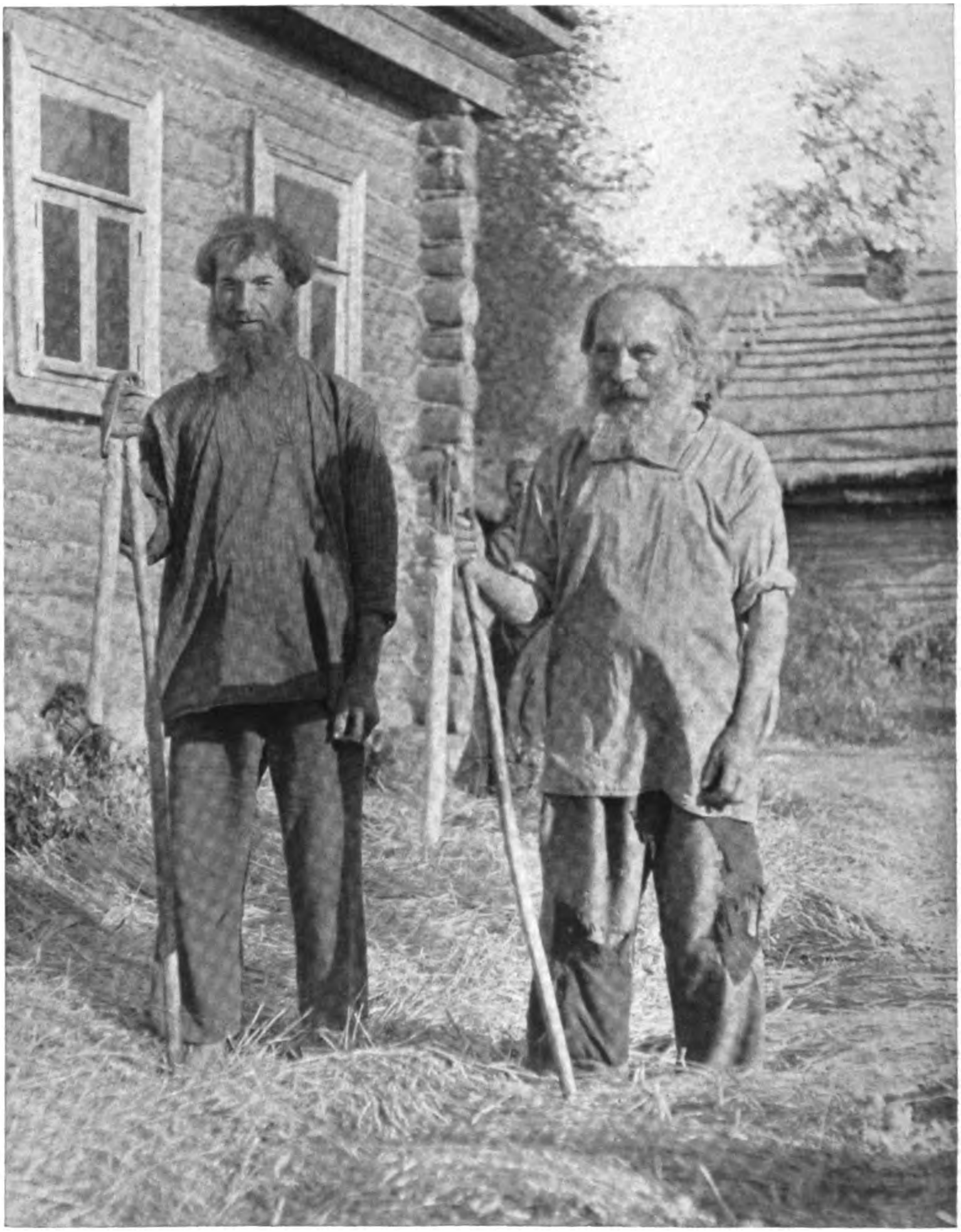
Photographs by Gilbert H. Grosvenor

SCHOOLMASTER AND BOYS: MOSCOW, RUSSIA

The percentage of illiteracy in Russia is higher than in any other civilized country. According to the most recent estimates (1908), only 211 persons out of every 1,000 can read and write. But these conditions are being remedied rapidly, for a census taken during the last decade of the nineteenth century showed that at that time only 50 out of every 1,000 could read and write. Illiteracy among the women of Russia is far greater than among the men, the proportion being more than two to one.

OF SUCH IS THE EMPIRE OF RUSSIA

A kindly, noble race of tremendous vitality and fecundity, in which the leaven of national intelligence has begun to work with amazing rapidity and power. Their inheritance is a land of fabulous resources and unlimited potential plenty; the possibilities of their development under a liberal and enlightened government enthrall the imagination. Truly, "the world is all before them now, and Providence their guide."



Photograph by C. S. Alden

SAFETY RAZORS HAVE NEVER BEEN POPULAR IN RUSSIA, AS BEARDS ARE THE FASHION

Only about one-half the land of the province of central Russia known as Nizhni-Novgorod is suitable for agricultural pursuits, and of this three-fifths is owned by noblemen and only about one-sixth by the hardy peasantry. Although much of the land is the fertile "valley black earth," the yield of wheat, rye, barley, oats, and potatoes is frequently insufficient for the population, so that nearly every year more than 100,000 persons leave their villages in quest of temporary work in neighboring provinces, or "governments," as the more than one hundred subdivisions of the empire are called. Owing to the efforts of the Nizhni-Novgorod zemstvo, there has been more progress in education in this district than in many of the other governments.

had formerly been three sisters there, but that the cold and dampness had been too much for the others, who had been forced to go home to recover their health. She showed me a new hut which was being built for her under the shelter of a near-by hill, which it was hoped would be drier and more comfortable than the tent she had.

There are about 25 of these "points" scattered at various places along the front, and the intention at each one of them is that anybody who comes along shall be taken in, whether prisoner, officer, visitor, general, or private, and given whatever he may be in need of.

Facilities are provided for hot baths and clean suits of underwear for tired soldiers; good and bountiful meals are supplied smoking hot for any one who is hungry; beds are there for as long a stay as may be found necessary, and in no case are questions asked.

I enjoyed a very good dinner during my visit. The fittings were of the simplest, but everything was clean and good. I peeked into the bath-house and found there some half dozen soldiers thoroughly enjoying a steaming vapor bath. They had just been allowed to come from the trenches and were shortly going back. Other groups of soldiers were lying about at rest, enjoying a smoke and perhaps a game of some kind.

This work is the nearest approach to what would be called Young Men's Christian Association effort in this country which I found anywhere on the Russian front. In general the men simply lie around their barracks when they are not working, unless they are attending church or playing some game in the open.

Photograph by Gilbert H. Grosvenor

A FEATHERED FORTUNE-TELLER AND HIS KEEPER AT THE FAMOUS NIZHNI-NOVGOROD FAIR

THE GRATITUDE OF THE SOLDIERS

All of this work was at first greatly resented by the officials who should have done it themselves, but before long even they realized what was being done in this quiet, inconspicuous way, and today the whole army realizes that without this splendid service the war, so far as Russia is concerned, would have been over long ago.

Under these circumstances the defects of bureaucracy and the good work of the unofficial organizations became more of a reality to the peasant soldier than they could otherwise have been, and his gratitude, while silent, was none the less sincere.

The zemstvo assemblies, which have long been the most liberal influences at work in Russia, have now become the most popular. They have unbounded in-

Photograph by C. S. Alden

RUSSIAN PEASANTS AT THE FAIR: NIZHNI-NOVGOROD

Situated on the River Volga, the great artery of Russian trade, Nizhni-Novgorod is world-famous for its fair, held each year from July 29 to September 10, during which time the value of goods sold and ordered sometimes amounts to nearly $200,000,000. Cotton, woolen, linen and silk stuffs, furs, iron ware, pottery, salt, fish, wines, teas, and leather are important articles of barter. As the capital of the government of the same name, the city ordinarily has a population of 100,000, but during the fair it is visited by 400,000 people from all parts of Russia and many points in Asia. The importance of the trading center dates almost from its founding, in 1221, as a barrier against the inroads of the Mordvins and Bulgarians.

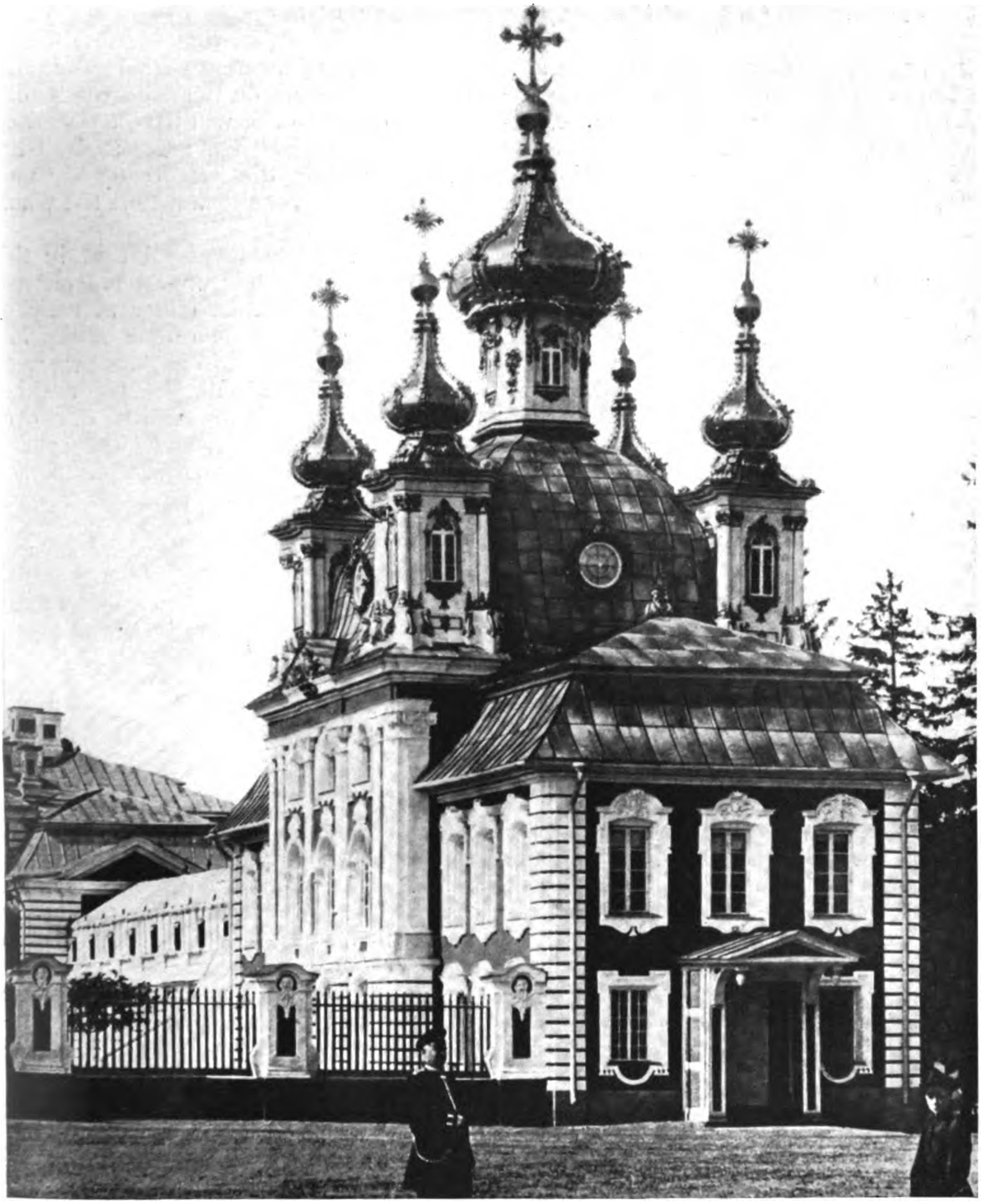
fluence on the people, and under the able and devoted leadership of such men as Prince Lvoff, President of the Association of Zemstvo Committees, and other patriots, they have, more than anything else, contributed toward the present changes in Russia.

The Liberal element, under the leadership of men like Paul Milyukoff, now Minister for Foreign Affairs; Alexander Guchkoff, President of the Third Duma, and a small group of far-seeing men, has had to contend, on the one hand, with the old regime, the dynasty, and the bureaucracy, and on the other with that far larger number of men and women who in their desire for a new and free government have not stopped at any means to attain their ends, and whose preaching and carrying out of the doctrines of anarchy and terrorism have retarded by so many years the establishment of free and representative government throughout the length and breadth of the great Russian Empire.

RUSSIA'S STRENGTH

What will be the result of the revolution on the present war? That is the question now uppermost in the minds not only of Allied statesmen, but of every one in the United States as well. Certainly, in a general way, this is not difficult of answer.

If the new leaders can succeed in bringing actively to their side, without foolish opposition from the more radical elements, the vast majority of the people and the rank and file of the army, they will have no trouble in bringing, or rather



Photograph from Boston Photo News Company

THE CHURCH OF THE IMPERIAL PALACE OF PETERHOF

Eighteen miles from Petrograd is the town of Peterhof, founded by Peter the Great in 1711. The imperial palace is built in imitation of Versailles, the main building being in three stories and connected with the wings by galleries. It was built by Peter the Great in 1720 and enlarged 30 years later for the Empress Elizabeth Petrovna. This church, with its five gilt cupolas, is the work of Rastrelli.

keeping, Russia in the war, in a position of greatly increased strength and vigor.

The mere fact that in the course of a long and bloody war Russia has been able at the same time to fight her foes at home and abroad proves most strongly her innate strength and steadfastness.

I have often been asked why Russia has not done better in this war; why, with her millions of man-power, she has seemed to have had victory time and time again in her grasp only to lose it by some mistake.

It has been impossible to make people realize what Russia was fighting—two foes at once, more than any of the other nations engaged in the war has had to contend against. We shall probably not know for long, if ever, what a struggle has been carried on within Russia against the forces which sought to deliver her helpless and bound to her enemies abroad.

Up to now the news has all seemed to favor the probability that the new Russia will succeed in forming a stable and powerful government on the ruins of the old, and in doing so she will have the earnest good wishes of all her allies and all her friends, and in the latter category may now be placed for the first time the whole of the United States.

For it must be admitted that in this country one of the strongest reasons for not entering the war, either actively or passively, on the side of the Allies has been the thought that in so doing we were backing Russian absolutism, the antithesis of everything for which our own form of government stands, the symbol of absolutism and terrorism, of autocracy against democracy, of darkness against light.

REPUBLICS—THE LADDER TO LIBERTY

By David Jayne Hill

Formerly U. S. Minister to Switzerland, to the Netherlands, and Formerly Ambassador to Germany

If we spread out a map of the world, for the purpose of comparing the territorial extent of the different kinds of government existing at the present time, we find that the area covered by "republics" occupies approximately 30,250,000 square miles, or considerably more than one-half the habitable surface of the globe.

If we add the area of the British Empire, the spirit of whose government is now entirely democratic, and whose "autonomous colonies," as the Dominions are now called, are virtually republics, the area of free government reaches the enormous total of about 41,500,000 square miles, or about four-fifths of the inhabited earth.

Turning now to the proportions of the population of the globe under the "republics" and other forms of government, we find that of the total inhabitants of the earth, estimated at 1,600,000,000, more than 850,000,000 are living under nominal republics; and if we add the population of the British Empire, which may be called a commonwealth of republics, the total would be about 1,250,000,000, or more than three-fourths of the human race.

If to these areas and populations we add those under constitutional governments, excluding all those under avowedly absolutist rule, we find only a small fraction of the globe still adhering to a system which only a century and a half ago was practically universal (see maps, pages 242 and 243).

FEW REPUBLICS IN 1776

These facts are the more astonishing if we consider what the result of such an examination would have been if made, let us say, in the year of our Declaration of Independence, 1776. At that time there would have been found upon the map of the world, apart from a few isolated so-called "free cities"—like Hamburg, Lübeck, Bremen, and Geneva—only three or four little patches of color to which the name "republics" could properly be applied—the United Netherlands, the Swiss Confederation, the Republic of Venice, and the Republic of Genoa.

At an earlier time there would have been found on the map of Europe a number of Italian city-states, like Florence, Padua, and others, that were called "republics," and one great area marked on the map as Poland, which was also called a republic; but in 1776 the Italian republics, with the exception of Venice, had totally lost what liberties they had previously been able to maintain and had become hereditary despotisms, while Poland, after having been partly partitioned between Prussia, Russia, and Austria, had sought refuge from utter dissolution by becoming in effect a protectorate of Russia.

With these examples before us, it would be extremely difficult to frame a definition of the word "republic," expressed in positive terms, that would fit all of them; for no two of them were in all respects alike. Not one possessed a written constitution in the modern sense. Not one admitted universal suffrage. The one common characteristic was the negative quality of repudiating an overlord.

They were *not*, as the national monarchies—with the exception of Britain—at that time were, the private possessions of dynastic rulers, who regarded the territory over which they ruled as crown estates and their inhabitants as subjects, to be transmitted by heredity from generation to generation or acquired by marriage, like ordinary private property.

In the commonwealths called "republics" the *res publica* was considered as vested in the community as a whole, especially with regard to legislation and administration; and yet the relation of the individual to the State was not very precisely defined in any one of them.

The prominence of negative over positive attributes in these eighteenth-century republics is explained by the fact that they were all brought into being by revolt against some form of arbitrary power. They were monuments of protest rather than embodiments of a constructive idea.

VENICE A REPUBLIC IN NAME ONLY

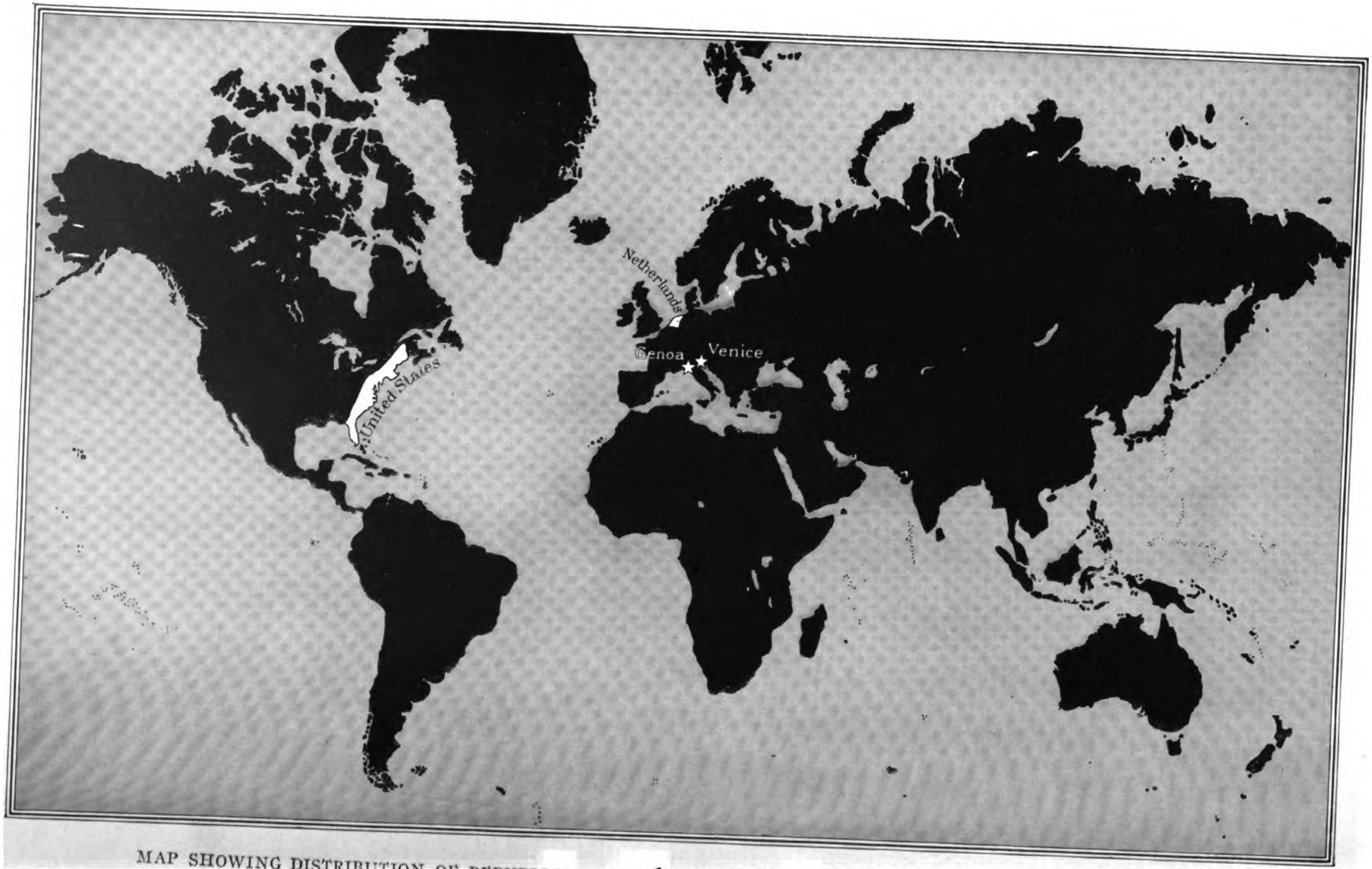
Venice, the oldest of these four attempts at self-government, was founded by refugees from the Italian mainland, who in the fifth century had sought refuge from the power of Attila in the islands of the lagoons at the head of the Adriatic. For self-preservation the islanders united, elected a leader, or doge, and formed a new State. This community was long considered as a dependency of the Eastern Empire, from which it did not become wholly independent until the tenth century.

In perpetual conflict with the imperial pretensions of the East or the West, Venice became through commerce and conquest a great maritime power, dominating not only the Adriatic and the lands bordering upon it, but also many of the ports of Greece, and possessing even a portion of Constantinople, which it held until the capture of that city by the Turks, in 1453, to whom it continued to offer a long and courageous resistance. At the end of the fifteenth century it had become the first maritime power of Europe, an ascendency which it did not entirely lose until the discovery of the sea route to India by the Cape dealt its commerce a death blow by making the Atlantic the main highway for Eastern trade.

Venice was never in reality a democracy. The doge, elected for life, in conjunction with the Senate, the Council of Ten, and other aristocratic bodies, ruled at times with almost absolute authority.

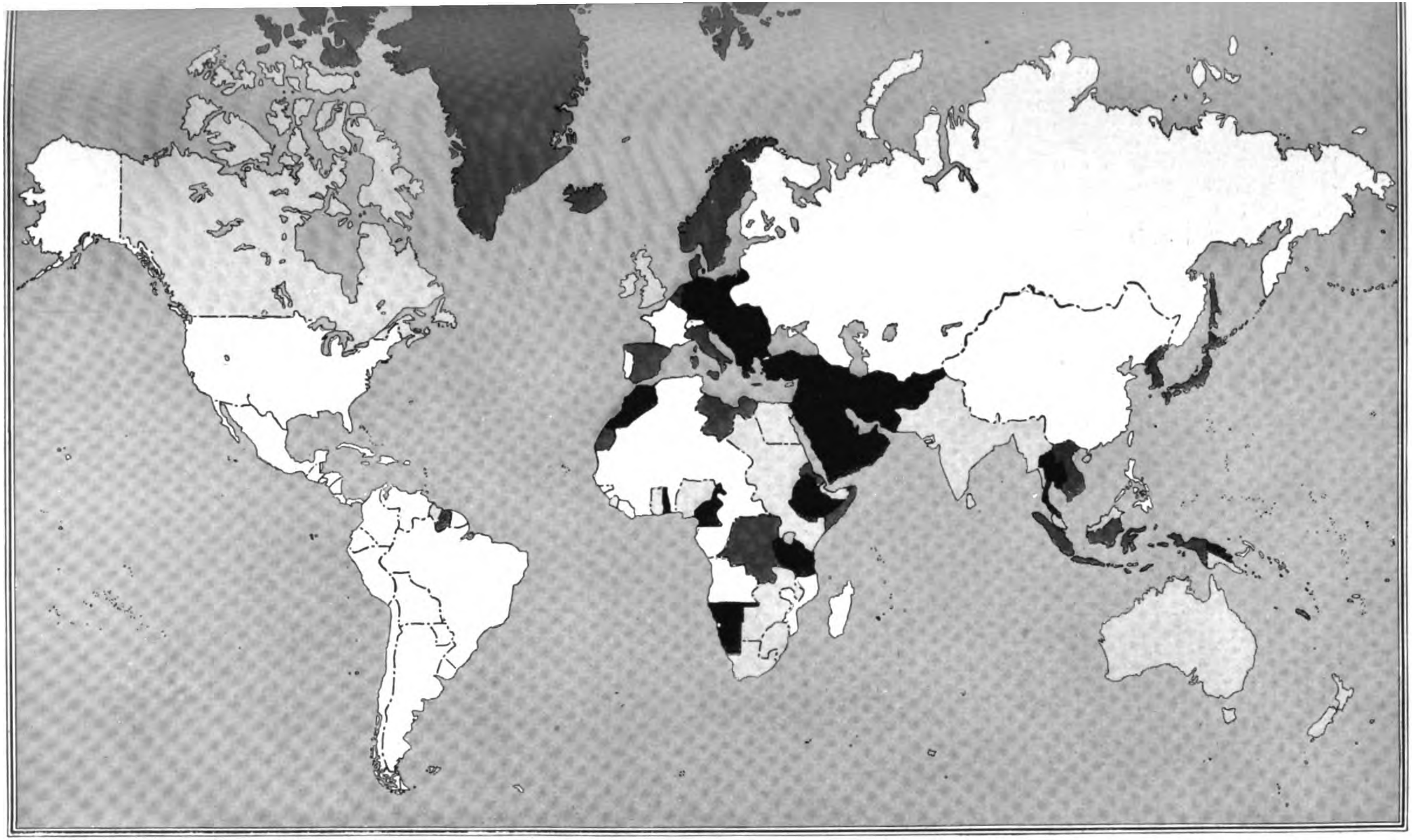
Although the Venetian republic was in no sense a democracy, it is interesting to trace the development of its safeguards of liberty. The perils to which the republic was exposed required both unity and continuity in the direction of its affairs. This use of centralized power was confided to the doge, but it was intended that he should never become a monarch.

Living, he was subject to the advice of the councils and the restraint of many legal limitations; and, even when dead, his administration was open to review by an examining body, and in case of condemnation reparation was exacted of his


United States
Netherlands
Genoa
Venice

MAP SHOWING DISTRIBUTION OF REPUBLICS IN 1776, THE YEAR OF OUR DECLARATION OF INDEPENDENCE

The white denotes the republics, United States, Venice, Genoa, Switzerland, and the Netherlands; black represents areas where the government was autocratic



MAP SHOWING DISTRIBUTION OF REPUBLICS AND DEMOCRACY IN 1917

White represents the republics; light gray the British Empire, whose citizens live under a government as democratic as our own. The next shade represents constitutional monarchies, like Sweden, Holland, and Italy; and the black, autocratic monarchies.

heirs. Although elected for life, the average service of a doge did not in fact exceed sixteen years, only men of middle age being regarded as eligible to the office.

The oath of the doge involved an explicit renunciation of sovereign rights. He was required to promise not only to execute the laws and decrees of the councils, but not to correspond directly with foreign powers, or to open letters addressed to him, even by Venetians, without the presence of a councillor. He could hold no property outside the territory of Venice; he could not intervene in any judgment, either of fact or of law; none of his relatives could be appointed by him to any civil, military, or ecclesiastical office; he was prohibited from permitting any citizen to kneel before him or kiss his hand. But as a symbol of the State he was clothed with magnificence, and stood before the world as the outward representative of supreme power.

GENOA WAS LIKE VENICE

Like Venice, Genoa, which was founded as a city in the eighth century B. C., in the tenth century of our era threw off the imperial yoke and became an independent republic. Like Venice, it also developed into a great maritime and commercial power, extended its territory by conquest, and was the possessor of valuable colonies. Subjected to French rule in the fourteenth century, it afterward regained its independence, but in 1746 fell for a time under the power of Austria. By 1776 it had lost most of its colonies, having been obliged in 1768 to cede Corsica to France.

Internal discord had completely delivered the republic into the hands of the aristocratic party. Four hundred and sixty-five families of the nobility were inscribed in the "Golden Book" and divided among themselves all the public powers, honors, and offices, to the exclusion of the middle class and the common people. A Council of 400 members chose the Senate; the Senate chose the eight governors who formed the Executive Council, and this body chose from its own number the doge, who represented the nation.

THE SWISS REPUBLIC IS VERY OLD

Altogether different in form and structure was the Swiss Confederation. It, too, came into being through a revolt against external authority. The three "Forest Cantons"—Uri, Schwyz, and Unterwalden—comprised in the duchy of Suabia had fallen under the rule of the counts of Hapsburg. Upon the death of Rudolf, in 1291, "in view of the malice of the time," these cantons formed a defensive league and resolved to recognize no chief who was not of the country, and to maintain the peace and their rights by their own armed force.

The parchment upon which their compact was written is still preserved, and bears as seals the cross of Schwyz, the bull's head of Uri, and the key of Unterwalden.

This document was not a declaration of independence and retained a trace of feudalism; for it enjoined that "whoever hath a lord let him obey him, according to his bounden duty." But it was a declaration of rights and a firm resolution that they should never be taken away by the power of a usurper. The efforts of the Hapsburg emperors to reduce the cantons to subjection gave repeated opportunities for the fulfillment of this pledge.

In 1513 the Confederation had grown to thirteen cantons, Berne, Zürich, Lucerne, Friburg, Zug, Glaris, Bâle, Soleure, Schaffhausen, and Appenzell having united with the "Forest Cantons"; but this expansion had entirely transformed the original league. Subject territories, added by conquest, now formed part of the republic. The cities had contributed decisive elements of change, for they were less democratic than the "Forest Cantons." In truth, in some instances, the cities had developed the attributes of ambitious and oppressive oligarchies.

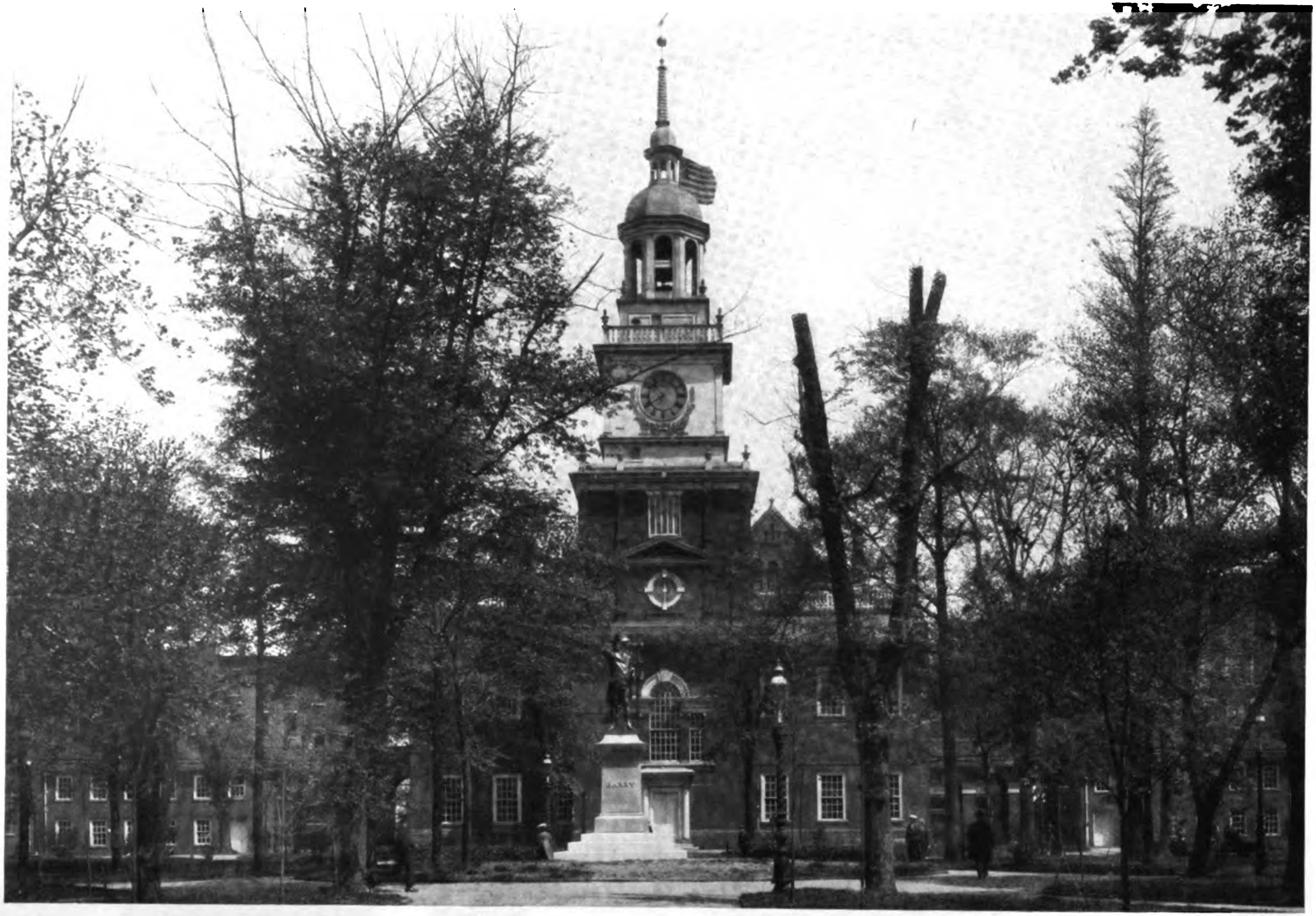
A CHILD OF BLOOD AND HEROISM

Like the Venetian and the Swiss republics, the United Netherlands was a child of revolution, but of a far more dramatic kind. In November, 1565, twenty confederates met at Brussels to form a league to resist the Spanish In-

Photograph by Edwin Levick

THE STATUE OF LIBERTY IN NEW YORK HARBOR

This glorious symbol of freedom, towering 300 feet above the waters of New York harbor, was purchased by popular subscription and presented to the United States by the people of France in commemoration of the hundredth anniversary of the Declaration of Independence and in token of the undying bond of sympathy and friendship that exists between the citizens of the two great republics—a love which Lafayette and Rochambeau brought into being more than a century ago. The statue itself is 151 feet in height from base to torch, and is the work of the eminent French sculptor, Bartholdi.



Photograph by Rau Art Studios

THE CRADLE OF LIBERTY—INDEPENDENCE HALL: PHILADELPHIA

In this hall our Declaration of Independence was signed, July 4, 1776. Here Washington received his commission as Commander-in-Chief of our armies. A few yards away, facing Independence Square, is Congress Hall, in which the Congress of the infant republic held its sessions from 1790 to 1800 and in which Washington was inaugurated for his second term as President.

quisition, and in the following year a wave of popular indignation against the royal edicts, which condemned to be burned fifty or sixty thousand persons, swept over the Netherlands.

The Duke of Alba was sent to execute the orders which the Prince of Orange refused to obey and to exterminate the heretics. A reign of terror followed, during which the Prince of Orange raised armies, which he led with consummate military genius; but they steadily melted away before the Duke's superior power, until heresy and patriotism seemed fatally crushed.

With unfaltering faith, however, the Prince of Orange pursued his resistance, steadily demanding the withdrawal of the Spaniards from the Netherlands, the free exercise of religion, and the restoration of the ancient rights and liberties of the land. By the Union of Delft, in 1576, he had federated Holland and Zeeland. In 1579, by the Union of Utrecht, Holland, Zeeland, Utrecht, Gelderland, Friesland, Overyssel, and Gronigen united to sustain the freedom of religion and renounce allegiance to the King of Spain.

These seven provinces, presided over by the Prince of Orange as elective Stadtholder, formed a confederation with a central legislative body called the States General; but so jealous of all central authority were the provinces that no laws or engagements could become effective without the sanction of a majority of the separate provincial assemblies. In 1650 the anti-monarchical sentiment was so strong that even the elective stadtholderate was abolished; to be restored, however, in 1672, and made hereditary in 1674.

Like Venice, the Dutch Republic became a maritime power of great importance, waged war on land and sea, and acquired by conquest valuable colonies.

FREEDOM HAS ALWAYS BEEN A DELICATE FLOWER TO KEEP ALIVE

All these republics, as we have seen, were primarily based upon the repudiation of autocratic power; but no permanent political organization can be sustained by a mere negation. At the basis of republicanism in every form is a conception of liberty united with a sense of social solidarity.

The positive element in the conception of a republic is the freedom of the individual, which rests upon the conviction that there are in the nature of man certain innate qualities that may justly claim the right of expression, and which, therefore, ought not to be suppressed by arbitrary power.

The chief problem for a republic has always been the organization of liberty in such a manner as to render it permanently secure. In this no one of the republics of antiquity had ever entirely succeeded. The Greek city-states—like Athens, Sparta, Thebes, and Argos—wavered between aristocratic and democratic control; but the existence of slavery and a subject class rendered all of them to some extent oligarchical.

The Roman city-republic was submerged by its own internal expansion of power and its external growth of responsibility, which created conditions that no democracy could satisfy or control. The later Italian city-states were either absorbed by more powerful neighbors or in their efforts at self-preservation from foreign intrusion degenerated into tyrannies, as the Greek republics often had before them.

Freedom has always proved a delicate flower to keep alive. Oligarchy has tended to narrow the depositories of power until it became the possession of a single master; while democracy, on the other hand, recognizing in emergencies the weakness of divided counsels, has tended to confide its power to the hands of a dictator.

REPUBLICS THAT HAVE FAILED

In no form of government is equilibrium so unstable as in a republic, which is essentially a balance of forces, any one of which, if exaggerated, is capable of consummating its destruction. In addition to this inherent internal instability, upon which the demagogue skilfully plays for the accomplishment of his selfish designs, a republic is always peculiarly exposed to the intrusion of foreign influences and to the peril of foreign attack.

For this reason, republics have usually sought to find a safeguard in federation, through which alone the republics of the eighteenth century were able to survive. Those which failed to avail themselves of this principle have been short-lived.

It was owing to this failure on the part of the Greek republics that Macedonian supremacy was finally established over the whole of Greece. A different foreign policy on the part of Athens, which might have united the rest of the Greek cities for common defense, would, in the opinion of historians, have saved the Greek republics from extinction; but democracies have usually been short-sighted in matters of foreign policy.

For obvious reasons, republics have as a rule possessed but a limited territorial extent; but magnitude alone is not a source of strength. Before the first partition, in 1772, Poland covered a larger area of territory than Spain, or France, or all the States of Germany put together.

A turbulent nobility had completely throttled the elective monarchy. It was the triumph of an oligarchy of landed proprietors whose anarchy was balanced by no industrial and commercial middle class, and which failed to evolve a leader sufficiently powerful to impose unity of action upon the nation.

By the *liberum veto,* adopted in 1650, a single member of the Polish Diet could, from that time onward, nullify the resolutions of the entire assembly, thus paralyzing every policy for the conservation of the republic.

THE LOVE OF LIBERTY SPREADS IN FRANCE

Between 1776 and 1806 profound causes of change were introduced into the European system, some of them from within and others from without, which at first greatly promoted the development of republics and afterward nearly destroyed them altogether.

It is important to note that in 1776 there was no expectation that a revolution would occur in France such as, fifteen years later, was to shake the continent of Europe to its foundations and institute, for a time at least, a wholly new order of things. No contemporary could possibly have foreseen this process of political evolution, for the causes of it were not confined to Europe.

The accession of the young king, Louis XVI, to the throne of France, in 1772, had aroused the hope that the evils brought upon Europe by the age of absolutism were likely to be remedied by a better administration of public affairs.

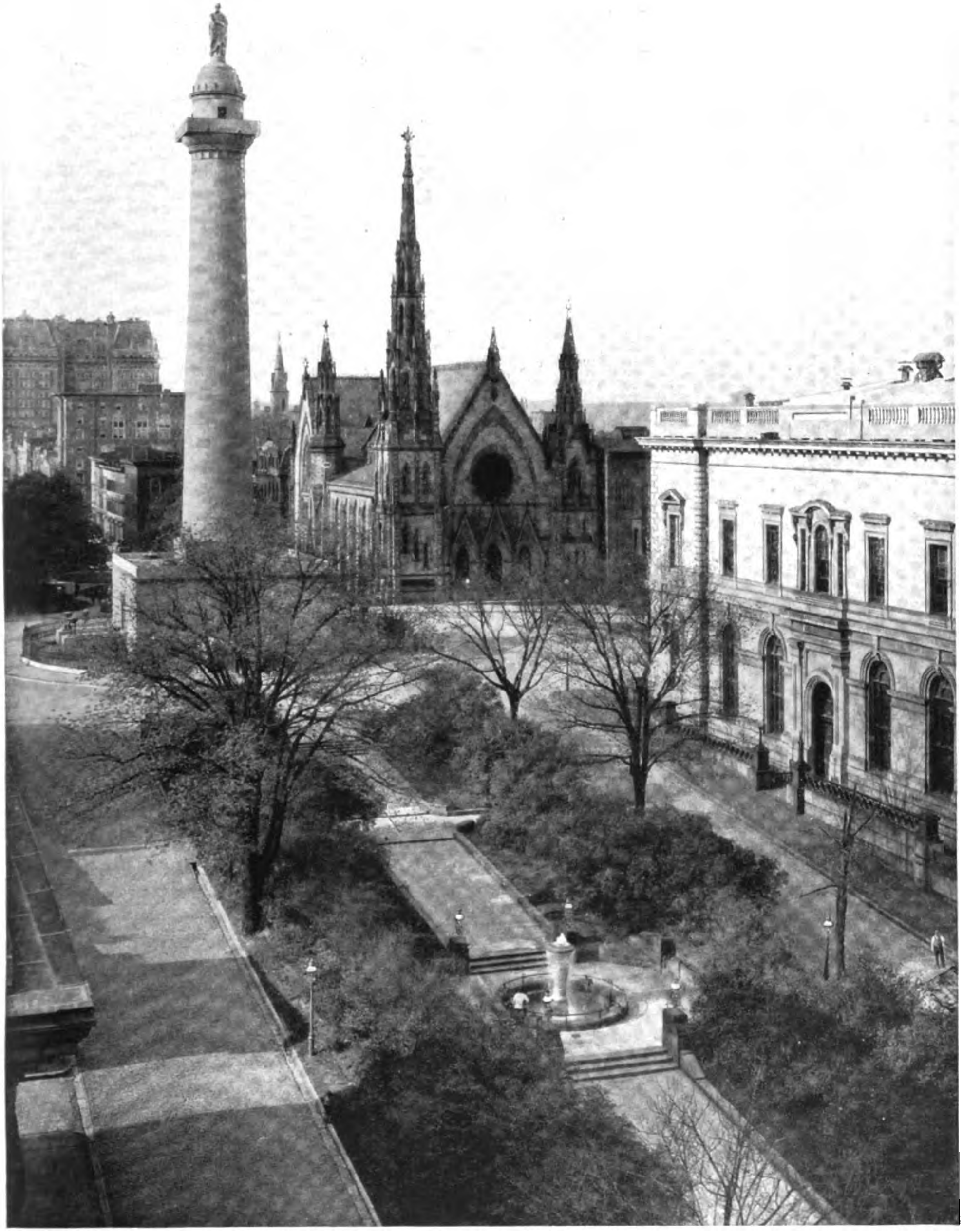
In 1776 there was not the slightest sign of the general upheaval that came to Europe during the young monarch's reign. There had been, it is true, much radical speculation regarding the nature of government. Montesquieu, Voltaire, Diderot, Mably, and Rousseau had spoken out boldly for greater liberty. In fact, their work of iconoclasm was already finished, so far as mere discussion was concerned. Montesquieu's *Spirit of the Laws,* in which he extolled the English system of government as the most perfect guarantee of freedom that had ever been devised, had been published a whole generation earlier, in 1748. Young men who had read Rousseau's *Social Contract* in its first edition, in 1762, had passed into middle life.

OUR FIRST AND GREATEST AMERICAN INVENTION

Although the sovereignty of the people and the right of the majority to rule, advocated by Rousseau, were theoretically hostile to the "old régime," they had produced in 1776 no actual fruit. Not one of the philosophers of the enlightenment had propounded a concrete program of political reconstruction.

Such literature as theirs might have existed forever without producing a revolution; and, in 1789, when the earliest tokens of a real revolutionary movement in France were perceptible, no definite proposition had been offered by any of the philosophical writers that could be of practical utility in guiding the nation in its desire to abolish the abuses of power from which France was then suffering; yet a whole generation had come to manhood since Rousseau's eulogy of democracy had appeared.

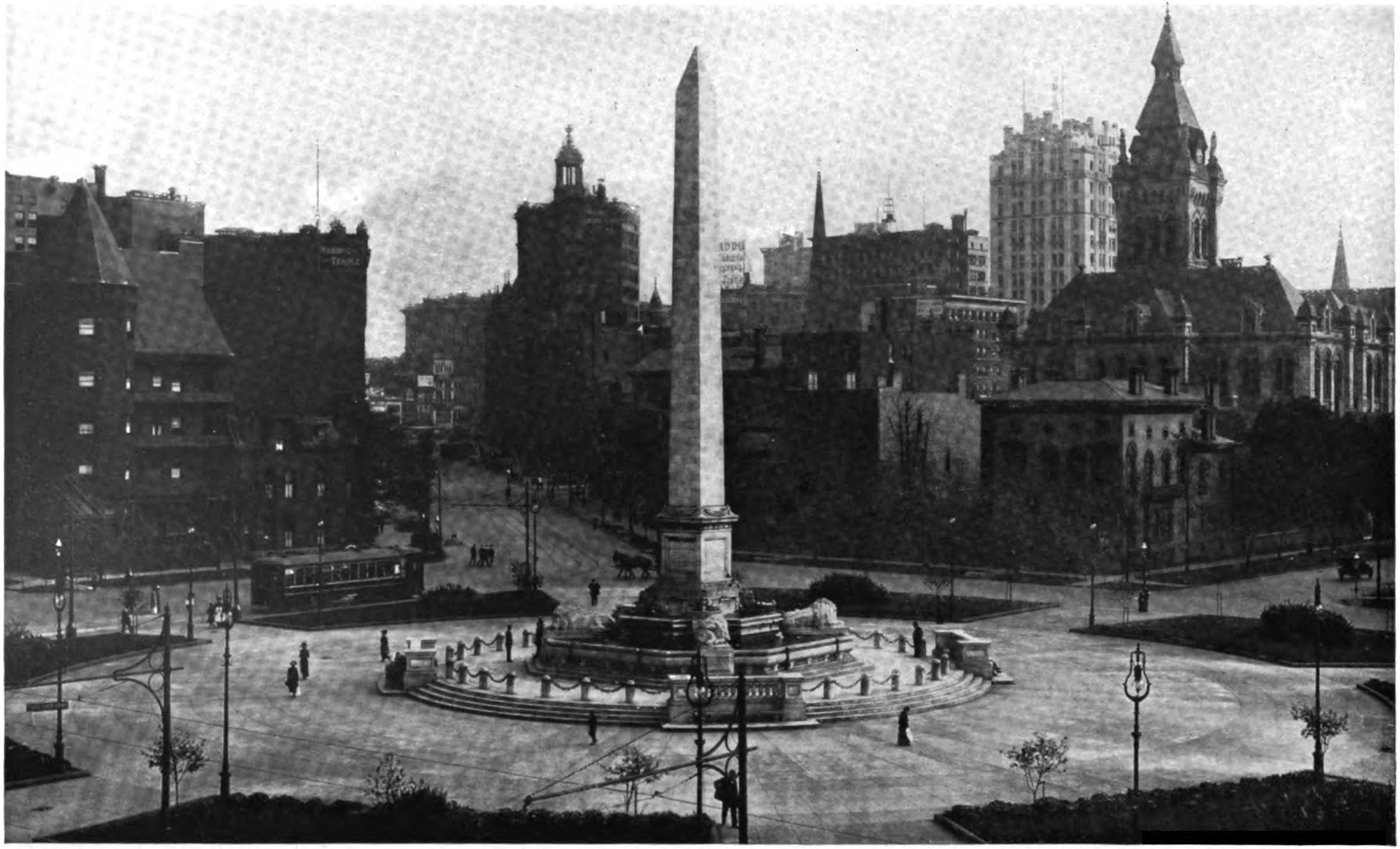
But in the meantime something of great import had happened. In America thirteen British colonies had, in 1776, declared their independence and had repu-



Photograph by James F. Huges Co.

WASHINGTON MONUMENT AT MOUNT VERNON PLACE, BALTIMORE

This was the first monument ever reared to the memory of the Father of his Country—a country whose principles of justice and whose economic opportunities have drawn more people to its shores than ever journeyed to any other.



Photograph by W. H. Brandel

THE MONUMENT TO THE MEMORY OF WILLIAM MC KINLEY: BUFFALO

Under the leadership of this martyred President, the United States took up the gage of battle to secure the liberty of a struggling alien people. Cuba's appeal for release from the thraldom of oppressive monarchy was heard and the blood of our great Republic was shed that another free country might find its place in the family of nations.

diated the Crown and the Parliament. Thirteen little republics had been created and federated. They possessed written constitutions which Franklin had translated, distributed, and expounded in France. The French armies that had aided in the War for Independence had returned to France full of enthusiasm. The Constitution of the United States had just been adopted. Lafayette was demanding the convocation of the long-forgotten States General, in order that France also might have a constitution.

The innovation in government introduced by the United States of America, an invention as essentially American as the telegraph and the telephone, was to revolutionize the governments of the world as completely as the telegraph and the telephone have changed our methods of communication.

It is not necessary here to follow in detail the development of the French Revolution. The circumstances of the time demanded a change, and the speculations of the philosophers had justified it, but it was the American example that marked out a pathway to effective action

THE REASONS FOR THE COLLAPSE OF THE FIRST FRENCH REPUBLIC

Unfortunately, however, it was not the guarantees of the American constitutions, but the unrestrained democracy advocated by Rousseau that took possession of the French mind. The Constitution of the United States, as finally adopted, unlike any other that had ever existed, while securing the rights of the citizens, placed limits on the powers of government. The French Constitution, on the contrary, simply transferred absolute power from one government to another. What was most original in the unique American invention was entirely overlooked.

The Revolution, which in its early stages promised to be a new organization of liberty, soon became a new form of despotism.

Then began the titanic struggle of absolute popular sovereignty with the established power of royal absolutism—the general war of French democracy upon all kings—which brought a young Corsican officer to the surface, and at last carried him, in the guise of an apostle and protagonist of liberty, to the imperial throne of France. Unbridled democracy demanded and found, first, a servant and then a master.

It is not difficult to comprehend how the conservative eighteenth century republics were swept off their feet by the flood-tide of a larger liberty. They were not entirely unwilling victims of conquest. Everywhere the doctrines of the Revolution preceded its armies and prepared the way for them. The Declaration of the Rights of Man and the Citizen announced the approach of a liberator. Even in the republics, the people had their grievances, which the new order of things that the French Directory proclaimed promised to abolish. Republics sprang up like mushrooms under the protection of the French armies.

As a result of the obstinacy and treason of Louis XVI, the French Republic had come into being on September 21, 1792. By the end of January, 1795, the United Provinces were in the possession of the French army, and the Batavian Republic was proclaimed on the model of the French Republic. In the meantime the Polish patriots, under the leadership of Kosciuszko, who had received a welcome in France, endeavored to restore the Polish Republic, but without success, and the final partition was arranged by Prussia, Austria, and Russia in 1795.

Bonaparte was sent to Italy as a conqueror, but his conquests were made in the name of liberty. Outwardly the obedient servant of the Directóry, even then he meant to be in due time the master of France and of all that the Republic might acquire.

First of all, however, there was necessary the conquest of men's minds, which could only be made in the name of freedom; and freedom was, therefore, Bonaparte's constant watchword.

But his vision of his goal was from the first perfectly clear. Speaking to Miot, the French ambassador at Florence, he said in 1797 of the destinies of France: "What is needed is a chief illustrious by glory and not by theories of government—the mere phrases and discourses of ideologues — of which the country understands nothing."

And, turning to Melzi, one of his Milanese adjutants, he continued: "As to your country, it has still less than France the elements of republicanism, and it is necessary to make less ado about it than with any other. We shall do what you wish, but the time has not arrived. We must yield to the fever of the moment. We shall arrange here for one or two republics in our own fashion."

THE CARDHOUSE OF REPUBLICS

"The fever of the moment" was the orders of the Directory, which had resolved to impose the French constitution on all the conquered States of Europe. Bonaparte understood the expediency of obedience, but, referring to himself as conquerer, he said to Miot: "I wish to quit Italy only to play in France a rôle similar to that I play here, but the moment is not yet come. The pear is not ripe!"

At Venice, where he was received with honor and his wife Josephine was loaded with ornaments, the consummate diplomacy which had in so many emergencies averted calamity failed to maintain the independence of the Republic. Austria coveted its maritime advantages, while France wanted a free hand at Milan and the Rhine frontier, which Austria could accord. Accordingly, by the treaty of Campo-Formio that bargain was made and the Venetian Republic was delivered into the hands of Austria.

The remainder of Italy was promptly republicanized, partly to its liking and partly against its will. In rapid succession, in 1797-1798, the territories of Milan and the Lombard plain, at first intended to be divided into two, were constituted into the Cisalpine Republic. Genoa and the neighboring coast were transformed into the Ligurian Republic. Rome and the States of the Church, from which the Pope was expelled, were erected into the Roman Republic. Finally, Naples and the other continental provinces of the Kingdom of the Two Sicilies were taken from King Ferdinand and became the Parthenopean Republic.

Even the Swiss Confederation did not escape from the hand of the conqueror. Most of the cantons were feudal and oligarchical. Catching from France the contagion of revolution, in 1798 the people of the Pays de Vaud rose in rebellion against the Canton of Berne. In other cantons insurrection broke out; appeal was made by the peasants for aid from France; Switzerland was invaded by a French army; a constituent assembly was summoned, and the Helvetian Republic was proclaimed with a constitution on the French model.

But the Swiss found it inconvenient to be reformed by strangers. The "Forest Cantons"—Schwyz, Uri, and Unterwalden—revolted, and in the end the French were as cordially detested as they had at first been cordially welcomed by the Swiss people, whose problem then was how to regain their independence.

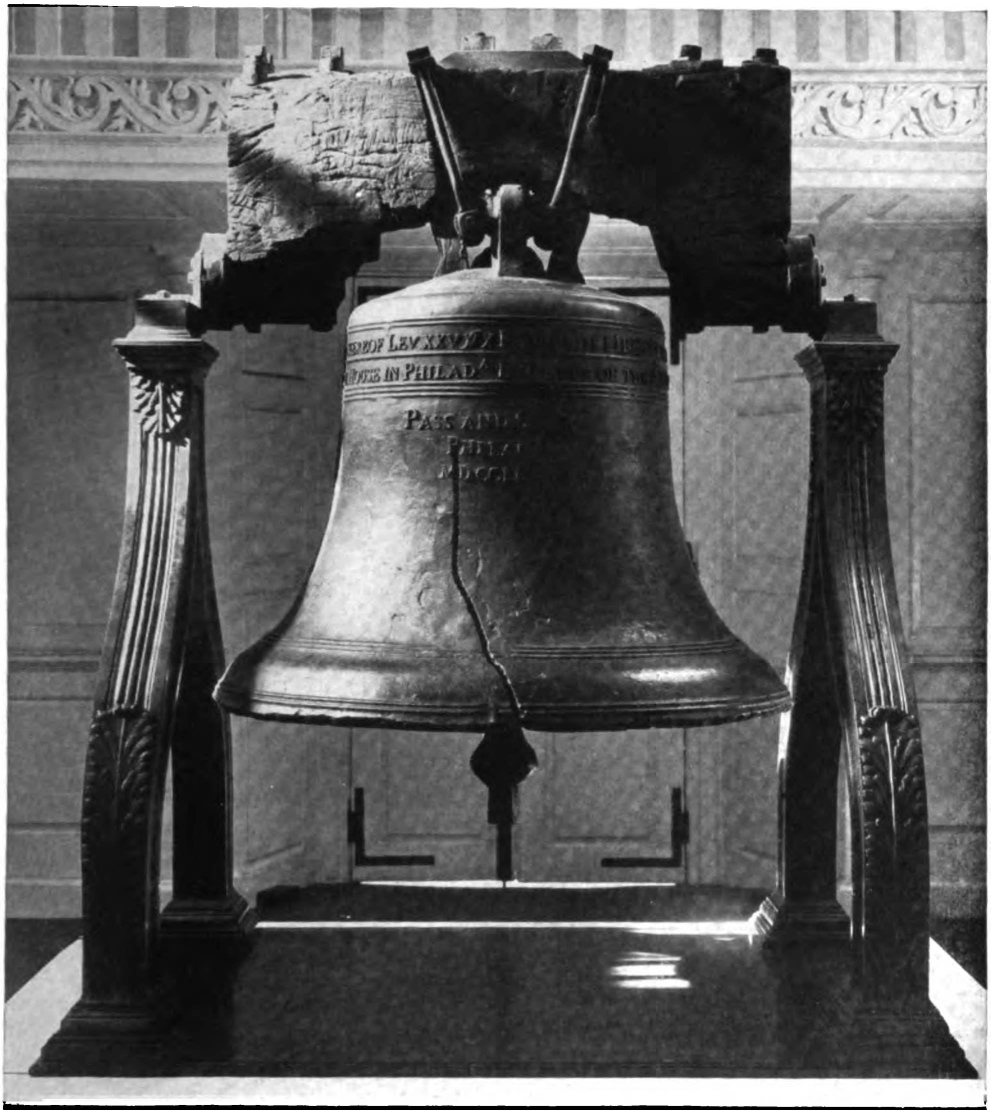
In 1804 this whole card-house of republics fell, and Napoleon I was proclaimed "Emperor of the French and King of Italy."

Then followed the grand distribution of crowns. Joseph Bonaparte was made King of Naples and afterward of Spain; Louis, King of Holland; Jerome, King of Westphalia; Murat, a brother-in-law, King of Naples after Joseph was sent to Spain; Prince Borghese, another brother-in-law, Duke of Guastalla; Eugene de Beauharnais, a stepson, Viceroy of Italy. More than thirty of Napoleon's marshals and generals were made princes or dukes.

In 1806 there was only one republic on the map of Europe—the Swiss Confederation!

THE INFLUENCE OF THE UNITED STATES INCALCULABLE

All the more wonderful, in view of these events, is the fact of the present vast extension of the republican form of government in every part of the world. What has brought it about? Undoubtedly the spread of democratic ideas throughout Europe during the Revolution of 1789 greatly promoted the constitutional movement between the Peace of Vienna and the Revolution of 1848, which made France a republic for the second time and caused great gains for constitutionalism everywhere.



Photograph by Rau Art Studios

THE LIBERTY BELL IN INDEPENDENCE HALL: PHILADELPHIA

Until Freedom's tocsin called to arms a people in defense of their unalienable rights to Life, Liberty, and the pursuit of Happiness, the "music of the spheres" was deemed a Pythagoran fancy. But the defiance to oppression which throbbed from the throat of Liberty Bell in 1776 will go ringing down the centuries as a pæan of praise from liberated mankind and an anthem of aspiration for those peoples still struggling toward the goal of self-government.

But it should not be overlooked that the continuous, unbroken development of the United States of America under a republican constitution has been an influence of incalculable consequence. The whole South and Central American development has found its inspiration in this influence, and a close study of the growth of the constitutional idea shows that there has been no instance of its adoption where this influence has not operated to some degree.

It has often resulted in a compromise, involving the retention of the monarchical tradition under constitutional limitations; but its logical outcome is the practical abolition of royal authority, which has been almost everywhere displaced by the authority of the people. It has been the chief cause of the gradual triumph of democracy.

ALL THE PEOPLE UNLIKELY TO GO WRONG AT THE SAME TIME

The strength of republicanism lies in the fact that all the people are not likely to go wrong at the same time. A monarchy or an oligarchy is liable to that calamity. Men may, however, go wrong in a republic also, and even a majority may sometimes do so.

There is for that reason need of constitutional limitations in a democracy as well as in other forms of government. Liberty can be secured only by restrictions upon the power of government, no matter what its form may be. These restrictions consist in the division of public powers, in deliberation of procedure, and the application of general principles of justice to all particular cases.

Herein lies the chief value of a constitution, and it is the combination of these qualities that gives to the Constitution of the United States its unique excellence. It renders possible the free selection of the wisest legislators. This is representative government. It divides by law the powers of government. This defines and limits official authority. It declares certain rights to be beyond the power of government to take away. This furnishes guarantees for life, liberty, and property. Finally, it places private rights under the protection of the judiciary. This insures that the citizen shall not be divested of his rights without due process of law.

But the supreme merit of such a constitution, united with the principle of federation, is that it applies to a great area and a great population, as well as to a small one, to which democracy was always before supposed to be necessarily confined.

But there is, in fact, no limit as respects territory or population to which the republican system may not be extended, provided it retains its truly constitutional character as just described. It is as good for 48 States as for 13. It may be as good for China or for Russia as for the original American colonies.

But an absolute democracy, a democracy that sets no bounds to its own arbitrary will, a democracy that is based on impulse and appetite, and not on reason and justice, is for any community of men an illusion and a danger. Any nation that is capable in the full sense of realizing this truth is ripe for self-government. A nation that does not realize it, no matter how glorious its past, is falling into decay and will not long survive as a free and independent republic.

WAR, PATRIOTISM, AND THE FOOD SUPPLY

By Frederick V. Coville

Of the United States Department of Agriculture

A HUNDRED million Americans are searching heart and mind to determine in what way each can contribute most to the success of his country in the war. We are remote from the battle line, and few of us, relatively, can take part in the actual fighting. It is everywhere recognized that our financial and industrial coöperation with the Allies will have a far greater effect in hastening the conclusion of the war than would the equipment and sending of a great American army to Europe.

In the industries fundamental to the manufacture of munitions we are in a position to wield an immense influence. So widely is this appreciated that the proposal to exempt from direct military service the skilled workmen of the munition industries meets with general approval.

The people of the United States, however, have not yet come to appreciate fully that our most important duty in this war lies in still another direction, indicated also by our economic and geographic position. I refer to the maintenance of an adequate food supply for the British and the French.

The armies of France and the British Empire must be well nourished. The British and French industrial workers who supply those armies with munitions must be well nourished also. Within the last few weeks Argentina has declared an embargo on the export of wheat. More than ever before, therefore, is it incumbent on us to maintain a wide and constant stream of food supplies to France, Great Britain, and to Italy also. If we fail to do so——

But we shall not fail. Our duty is clear. The task is large. Understanding and organization will enable us to accomplish it. Understanding and organization are at work upon it. The United States Department of Agriculture, State agencies and county agencies, all are carrying the message to every farmer in the country.

OUR DEMANDS FOR FOOD ARE INCREASING MUCH MORE RAPIDLY THAN OUR PRODUCTION

There are limitations, however, to the amount of food that can be grown on American farms, and none of these limitations is more potent than the scarcity of farm labor. Even in normal times the supply of efficient agricultural labor is, in general, inadequate. More land is available than can be farmed effectively. The town outbids the farmer for his labor by higher wages, or shorter hours, or fancied superiority of recreation, or by all these combined.

In war times the attraction of agricultural labor away from the farm becomes greater than ever. Military service, munitions manufacture, and the other industries of war all tend to take their quota from the farm. The establishment of an ammunition factory near the city of Washington has combed the labor from the farms, either directly or by progressive replacement in other pursuits, for miles around. The suburbs of many other cities where munition plants exist are having similar experiences.

As long ago as 1898 it was contended by Sir William Crookes, and the contention was sustained by one of our foremost agricultural statisticians, that by the year 1931 the increasing population of America was likely to consume all the wheat we raised.

We are already more than half way on the road to that destination. Increased acreage and improved agricultural methods have, it is true, intervened to increase our crops; but our consumption of food has also increased enormously, and the difference between what we raise and what we eat is shrinking year by year.

PRODUCE SOME FOOD IF YOU POSSIBLY CAN

One does not question that the American farmer will do his duty, or that the wide-spread movement for city gardening will contribute somewhat to the extension of our food surplus; but there remains a large class of our population favorably situated for food production and well able to take part in it, whose contribution is only a small fraction of what it might be made. I refer to the man whose business ordinarily is in town, but whose residence in the country gives him access to an area of ground varying in size from a small garden to an ample farm, used, however, only in small part or not at all for gardening or farming purposes.

Usually such country dwellers have the equipment for gardening or for farming, but make only such limited use of it as suits their convenience or their demands for recreation.

The time is now at hand when every non-farmer who has unemployed farming or gardening land, and every summer resident in the country, can contribute patriotically to the welfare of his country and the progress of liberty by producing all the fruit and all the vegetables he consumes, and in some cases also the eggs and poultry that he needs. And I mean not merely the fruits and vegetables that he uses in summer, but those he will require in the following winter.

Our grandmothers knew how to preserve fruit for winter use by drying it and by canning it, but they did not know how to can vegetables. Modern science has found out how to do this, and now the girls in the department of domestic science in every agricultural college and every agricultural high school in the country are taught how to take vegetables at the time when their flavor is most delicious and their texture the most tender and put them up in glass jars for winter use.

Such preserved vegetables are far superior to those we ordinarily buy in tin cans, for they receive a care in selection and preparation that commercial canneries seldom give.

Every pound of food grown and used in this way is a contribution of just that amount to the great stream of supplies that we are passing on to the British and the French soldier at the front, for whatever each of us consumes he must take from that stream unless he produces it himself.

THE WORK IS NOT SO DIFFICULT AS OF OLD

In modern gardening the backache-breeding hoe and weeder of a generation ago have been replaced by those wonderful little implements set on wheels and pushed in front of one by two handles like a plow. The heavy plowing and planting of spring is still a man's task; but these little hand cultivators make the later care of a garden a happy outdoor task for women and half-grown children. It brings the bronzed cheek of summer and the elastic step and clear mind of the winter that follows.

The congestion of freight traffic during the last year was due primarily to the scarcity of ships for the oversea trade, the consequent filling up of warehouses at the seaboard, and the delay of loaded freight cars waiting their turn to deliver their freight. The congestion was greatly increased, however, through an agricultural practice that has been growing up in the United States for many years: the raising of a special crop in that particular part of the country in which it can be grown most economically or in the greatest perfection and its shipment very long distances by rail to the consumer.

In times like the present every ton of food that can be grown where it is consumed, or not far from its place of consumption, will relieve our railroads of just that much space needed for the urgent transportation demands of war.

IT WILL HELP THE BELGIANS

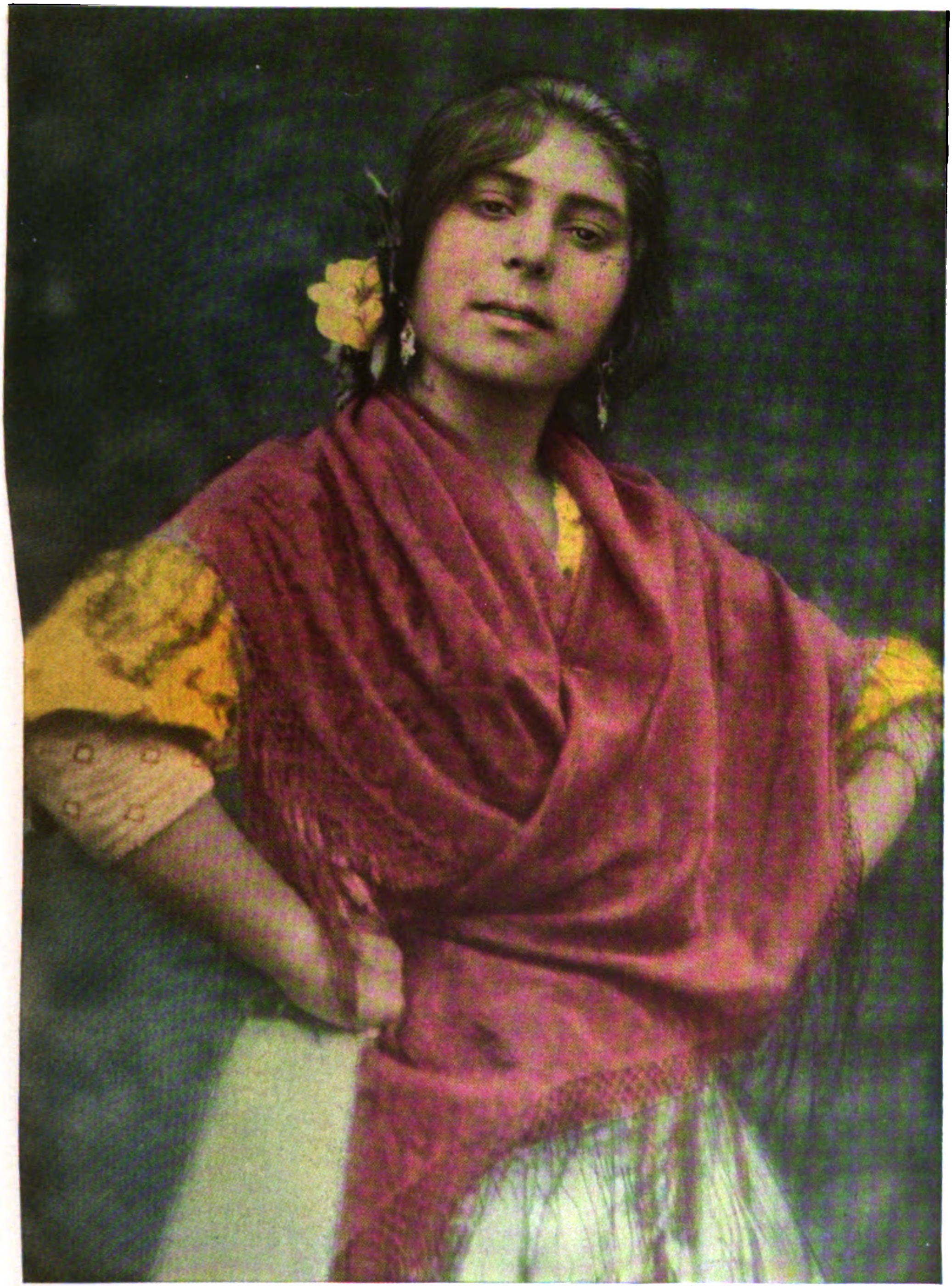
Because I suggest to the country dweller that in growing his own supplies he will be practising sounder economy and will have better food, better health, and the gladness of heart that comes from a patriotic act, let no one lose sight of the fact that the suggestion is made not primarily for those reasons, but for the sake of that gallant soldier who fights under the banner of "liberty, equality, fraternity," and that other soldier who carries grimly in his heart the message written in stone in Trafalgar Square: "No price can be too high when honor and freedom are at stake."

And the Belgians. What of them? When in schoolboy days we used to read the words, "*Horum omnium fortissimi sunt Belgae,*" we did not fully grasp their meaning; but after Liège and Namur, when Belgium stood broken and bleeding, but still fighting and unafraid, the spirit of the phrase burst upon us. "The bravest of all these are the Belgians," the very words that Julius Cæsar wrote two thousand years ago.

No service in this war appeals to America more than to carry food to the Belgians, in order to keep from hunger that little nation which, single-handed, defended the gateway of liberty.

But first we must furnish food to the British, the French, and the Italians. In doing so we shall have the added satisfaction of knowing that in spirit, if not indeed in physical fact, we are taking it also to the people of Belgium.

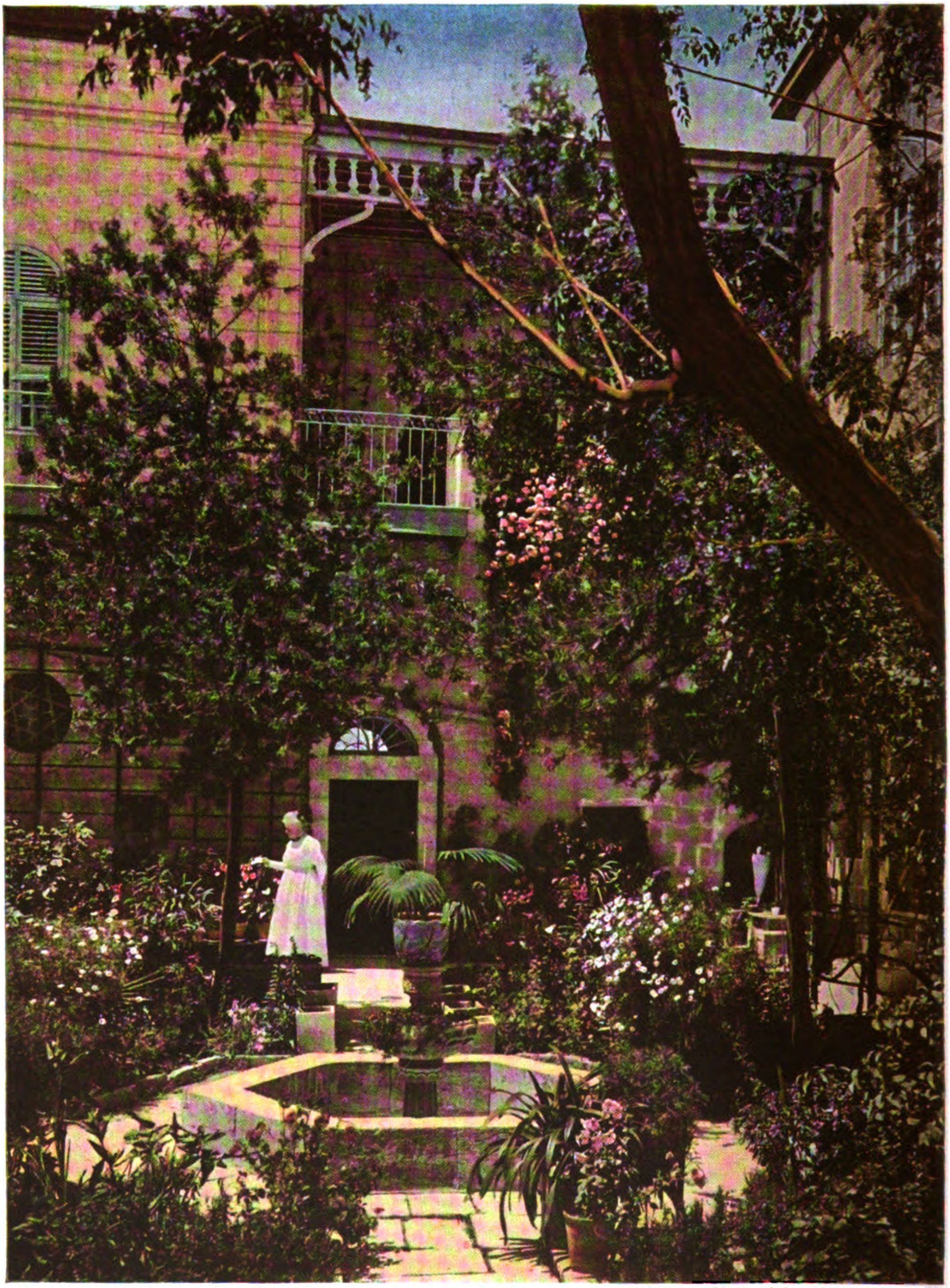
Let each of us do his share toward bearing bread to the Belgians.



Photograph and copyright by Austin A. Breed

A SPANISH GYPSY

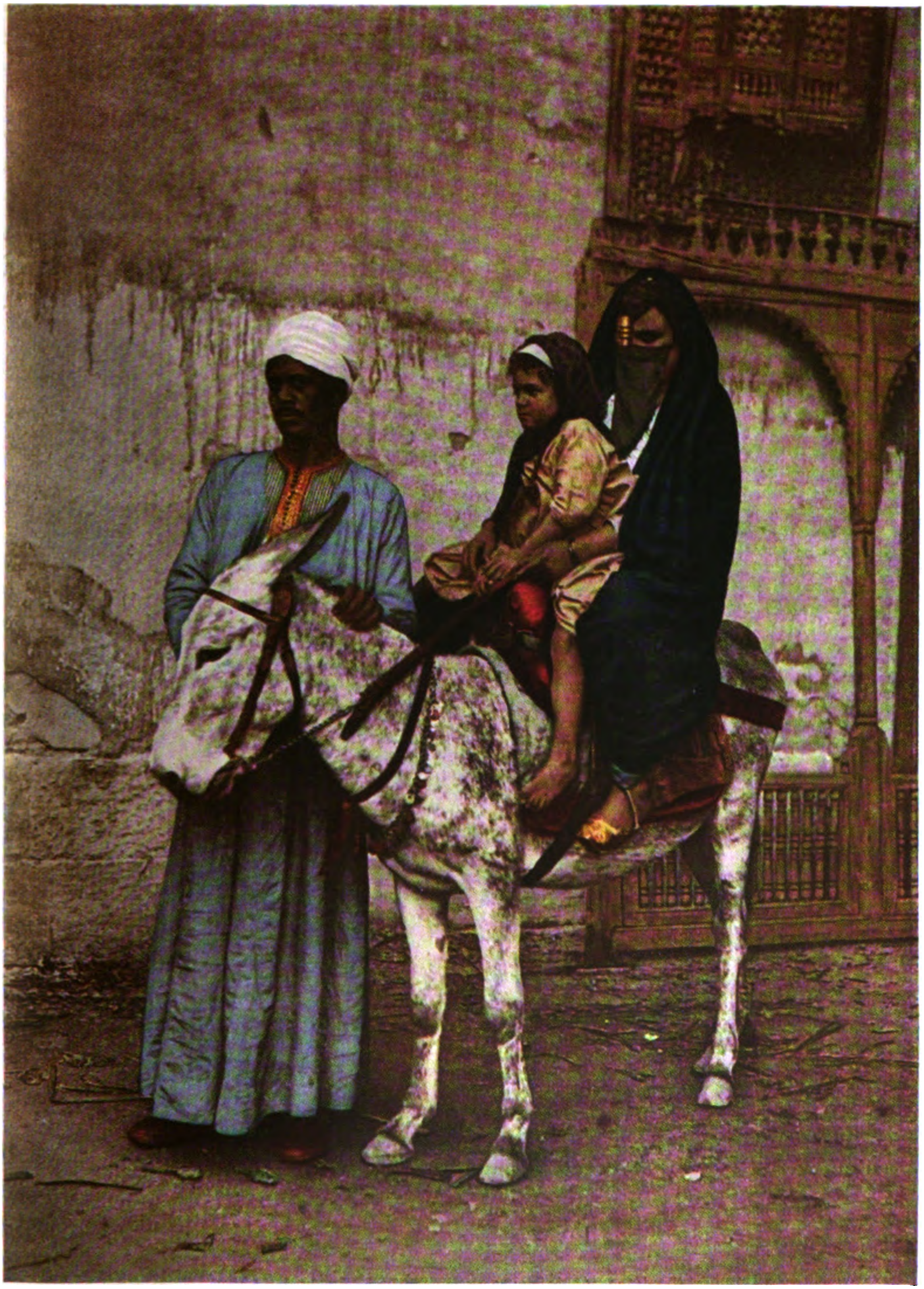
This beautiful girl of Granada represents the highest type of the aristocracy of gypsydom. She would lose caste at once if she were to work, but it is perfectly all right for her to beg or steal—your heart.



Photograph by John D. Whiting

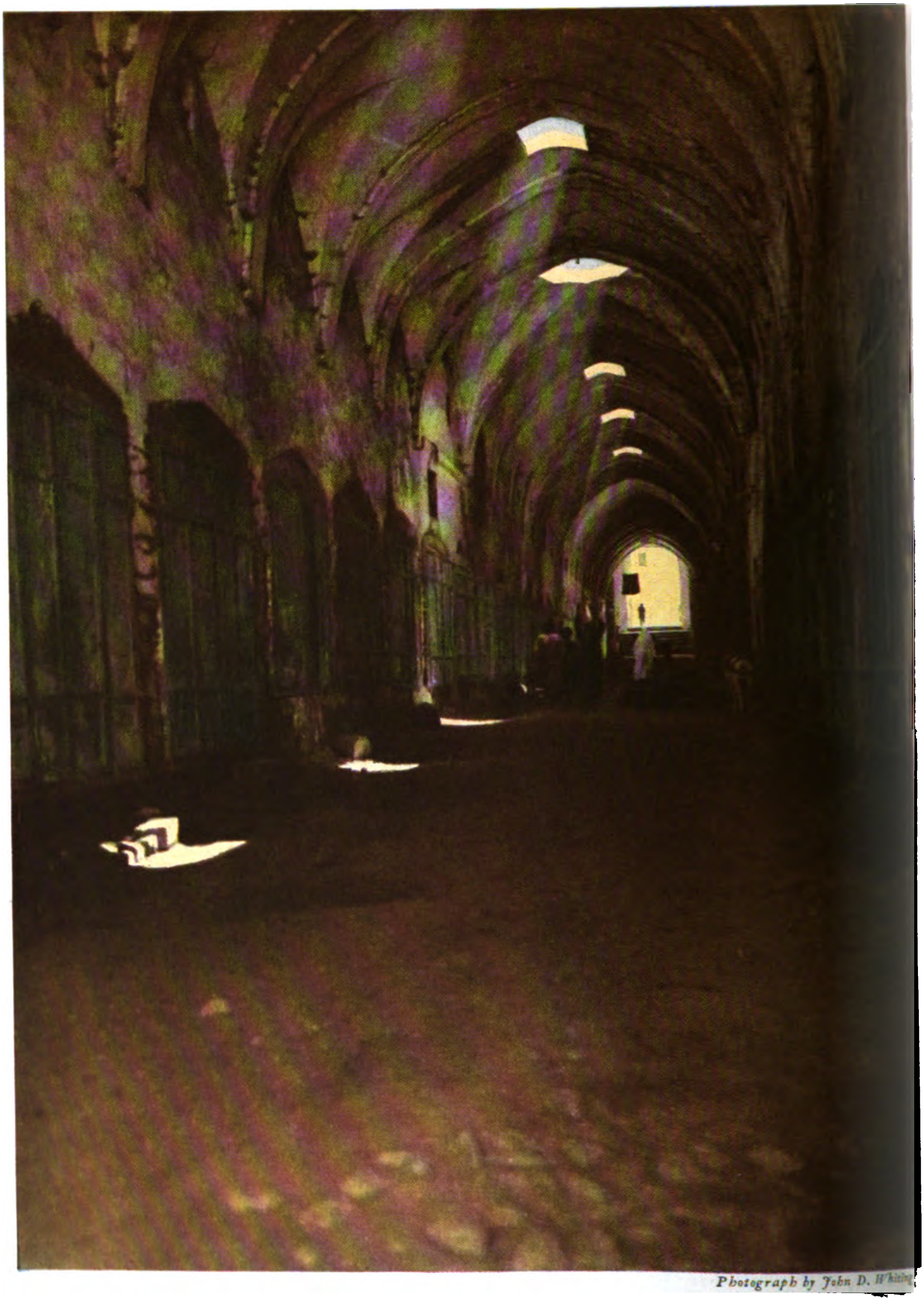
A GARDEN IN THE HOLY LAND

In days gone by, many of the city houses of the more prosperous residents of Jerusalem were built around an open court so that the Moslem women, although secluded, could have a garden, thus affording a measure of outdoor life. This is now the home of an American.



AN AUTOMOBILE OF THE ORIENT

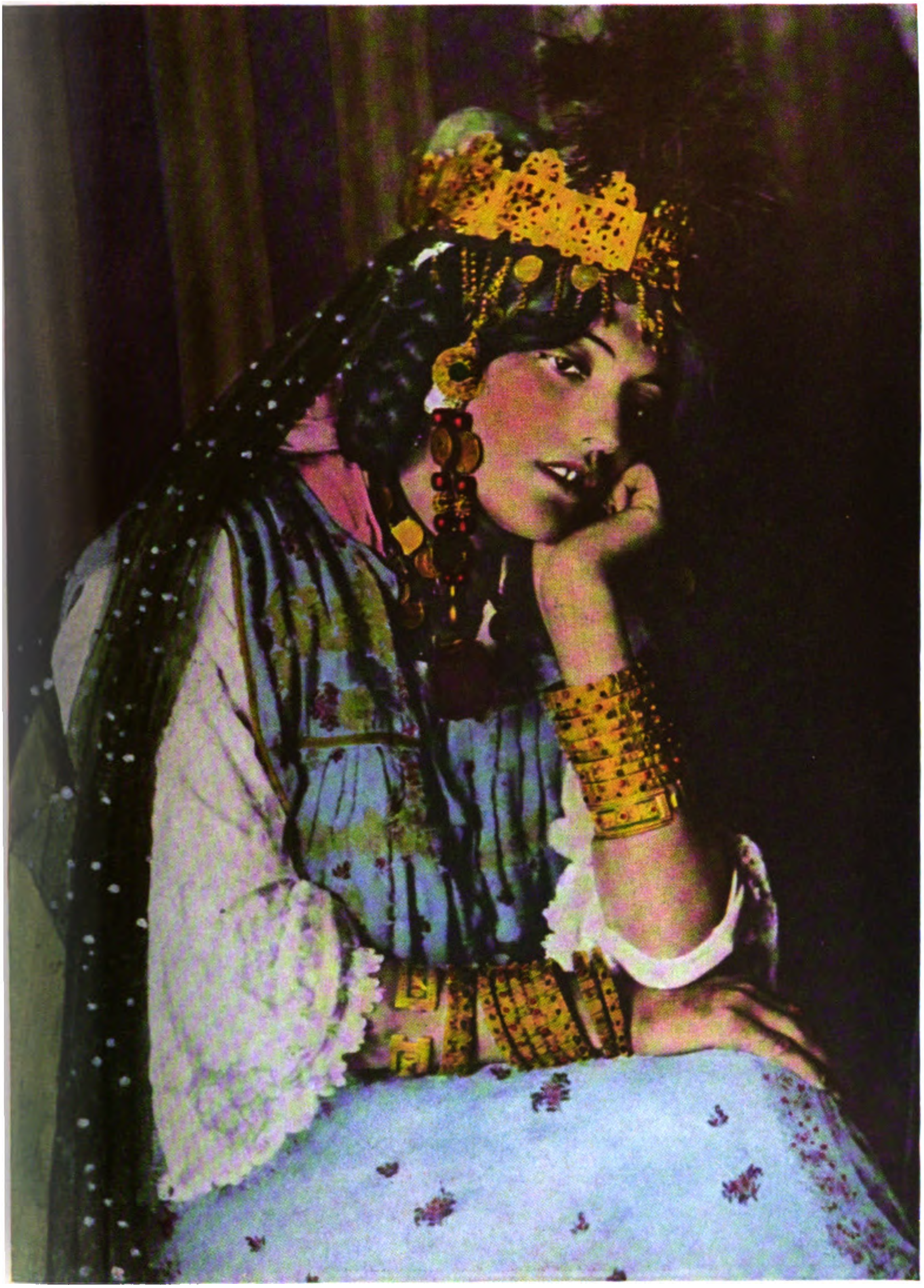
The donkey is the patient burden-bearer of Northern Africa just as he is in many other parts of the world. He has carried heavy loads from time immemorial—both passengers and freight—and makes no protest until the accumulation of trouble swells his heart and he seeks relief through an impassioned bray.



Photograph by John D. Whiting

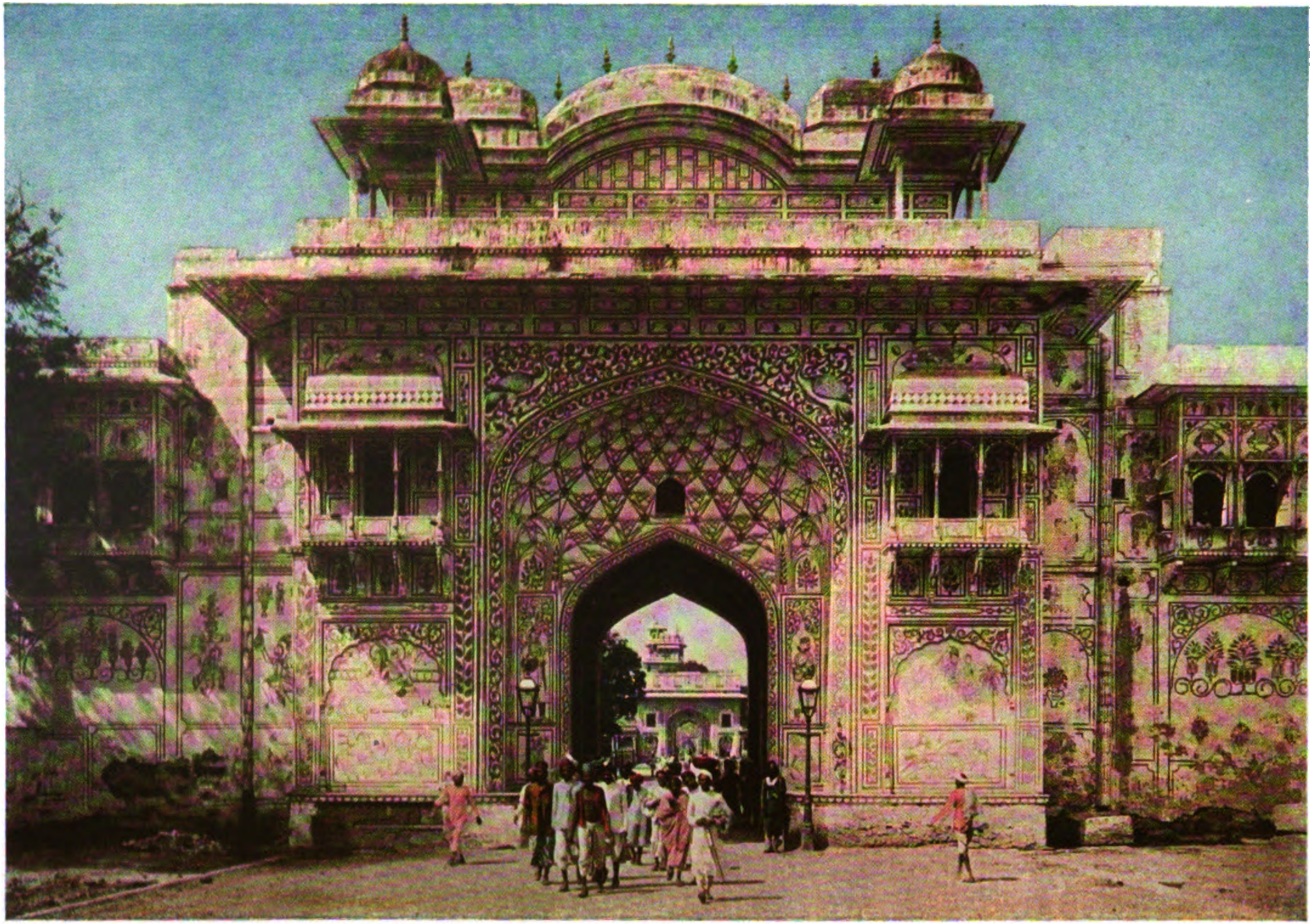
THE ABANDONED COTTON MARKET, JERUSALEM

One of the entrances to the temple area within which stands the Mosque of Omar. There is a biblical atmosphere about this old passageway, the cobbles of which have been worn smooth by the weary feet of the ancients.



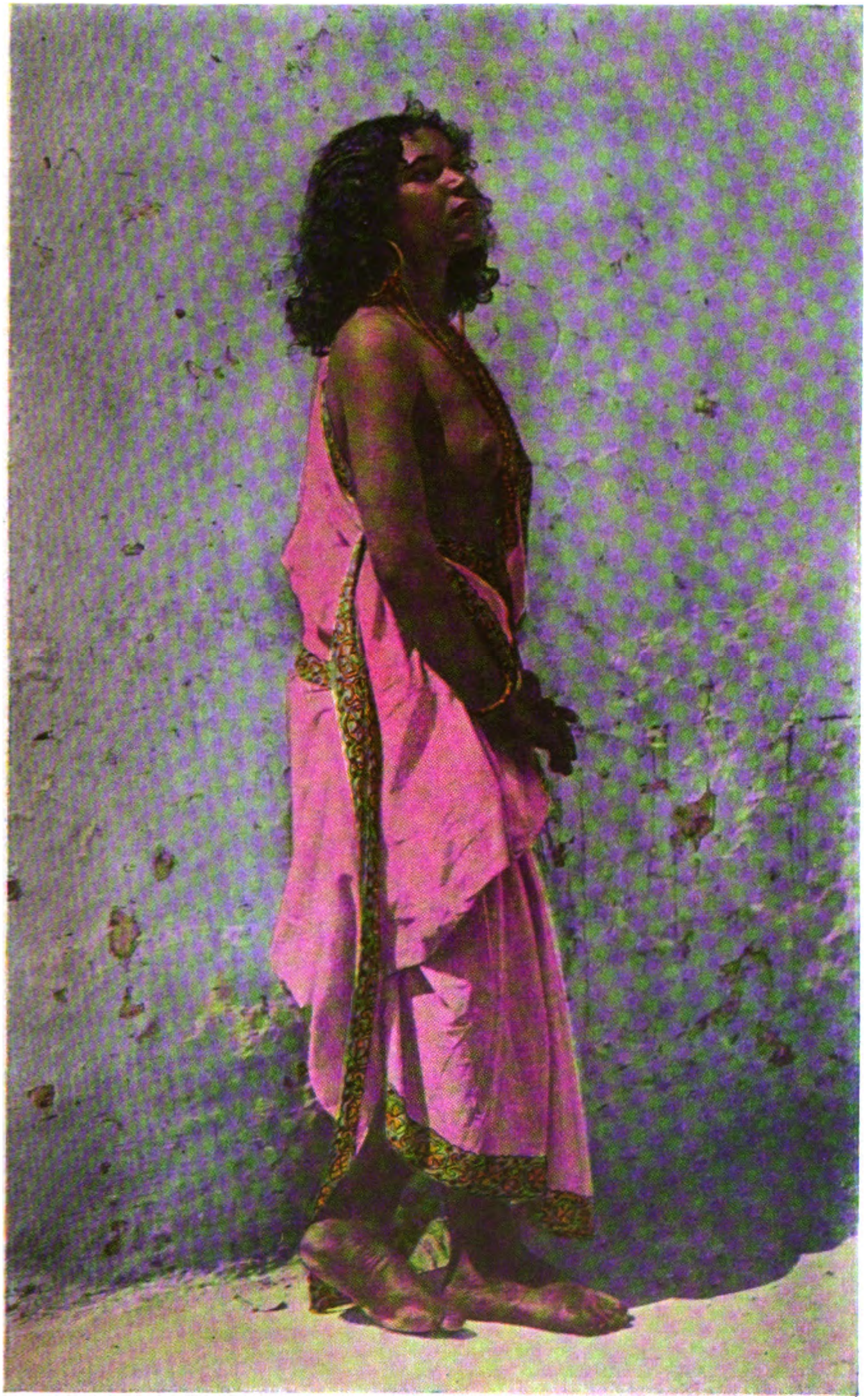
A DESERT FLOWER

"Somewhere in the Sahara" lived this child of the Desert until she came to Biskra, the "Garden of Allah," to earn her dowry as a dancer. One would imagine that she is dreaming of some turbaned knight left behind and counting the days until she may return to her natal tent.



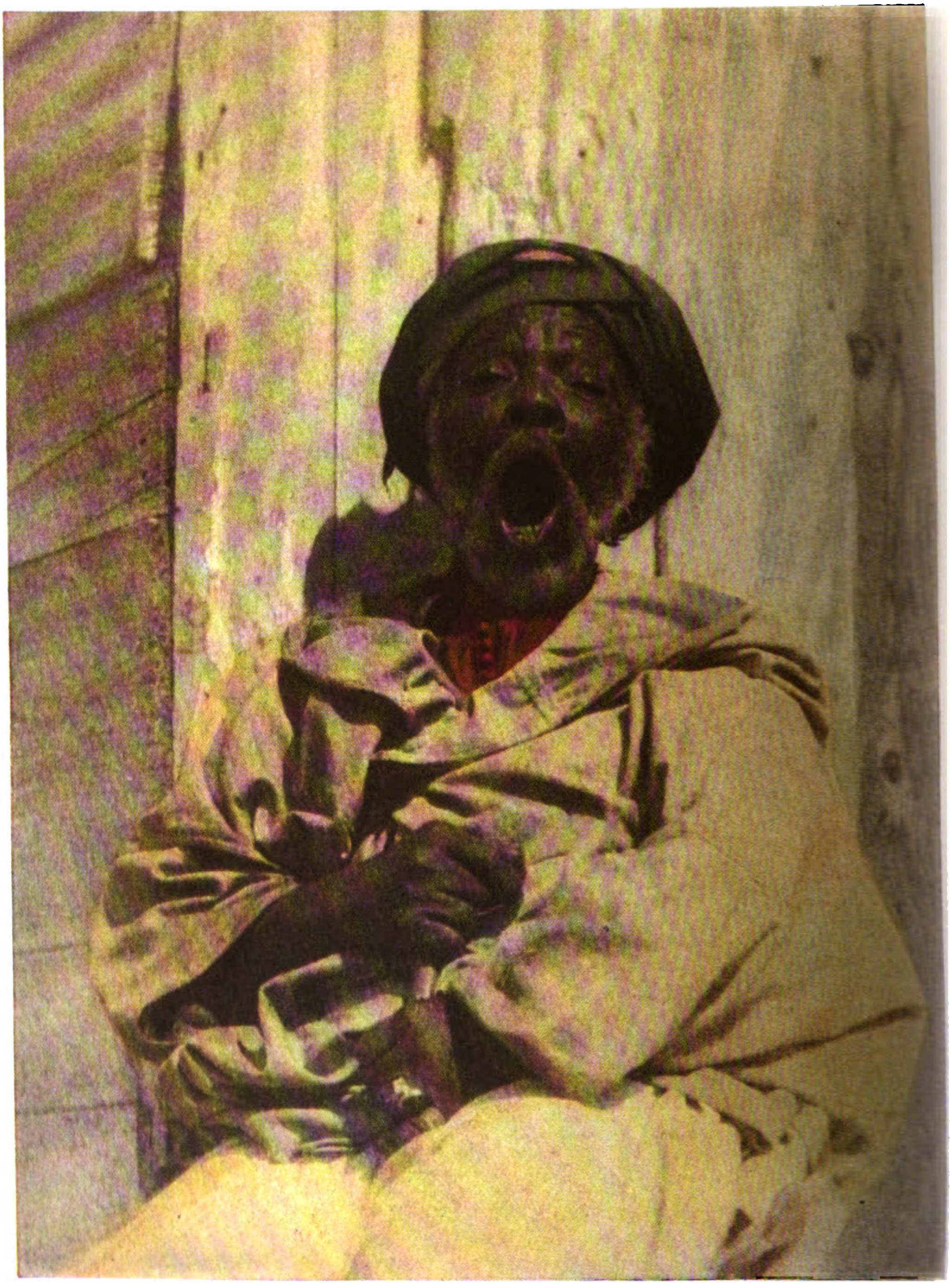
THE GATE OF JAIPUR, INDIA

Built of pink stucco and surrounded by a great wall with many towers, this city is the chief financial center of the state of Rajputana and a commercial emporium of no mean proportions. Paved streets, some a hundred feet wide, divide the city into six equal sections. Founded in 1728 by the great Maharajah Jai Singh II, it was named for him, and its chief attraction is his magnificent palace in the center of the city. It is the only city in India laid out in rectangular blocks.



A DAUGHTER OF ARABY

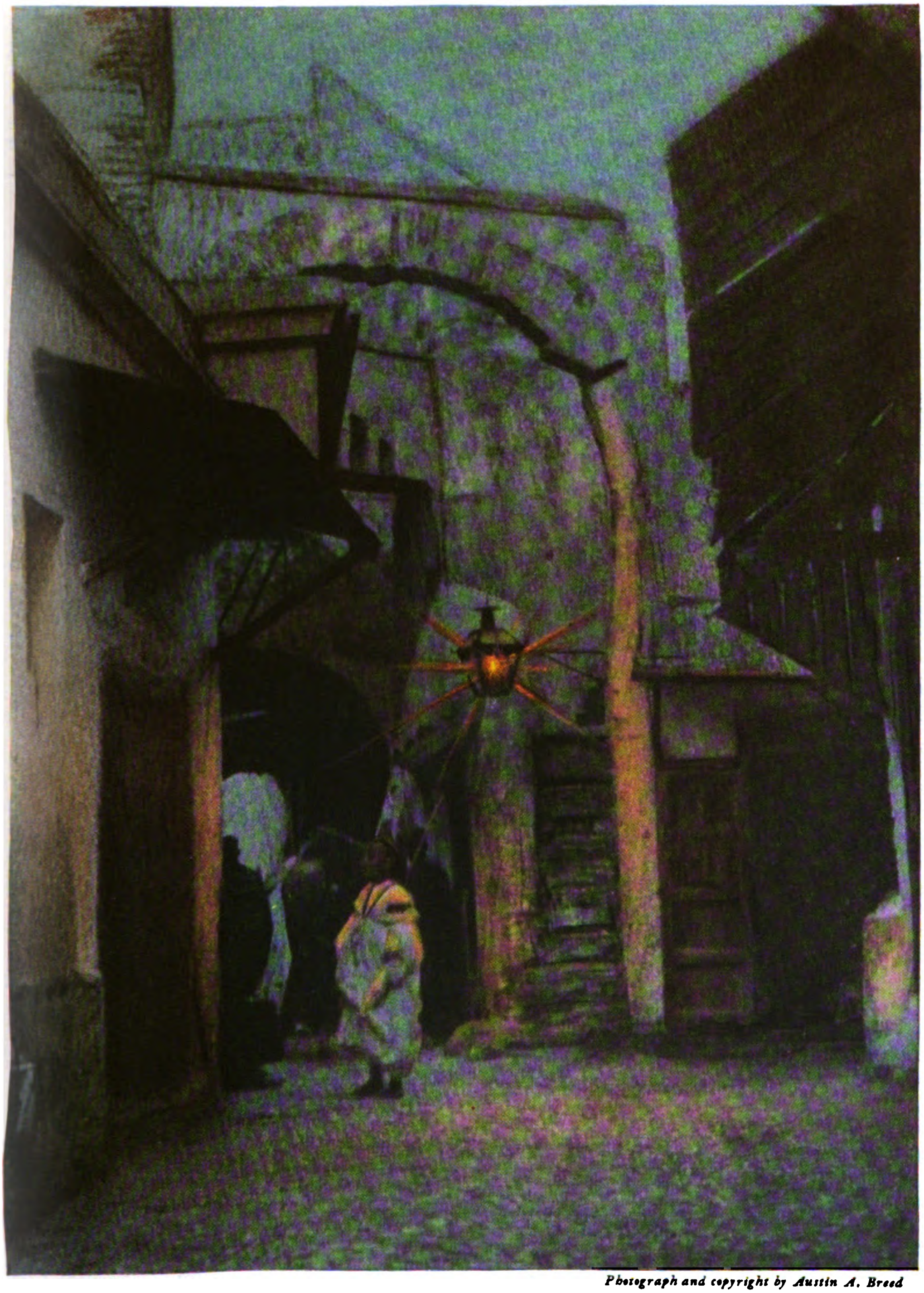
" Full many a flower is born to blush unseen,
And waste its sweetness on the desert air. "



Photograph and copyright by Austin A. Breed

A MINSTREL OF THE ORIENT

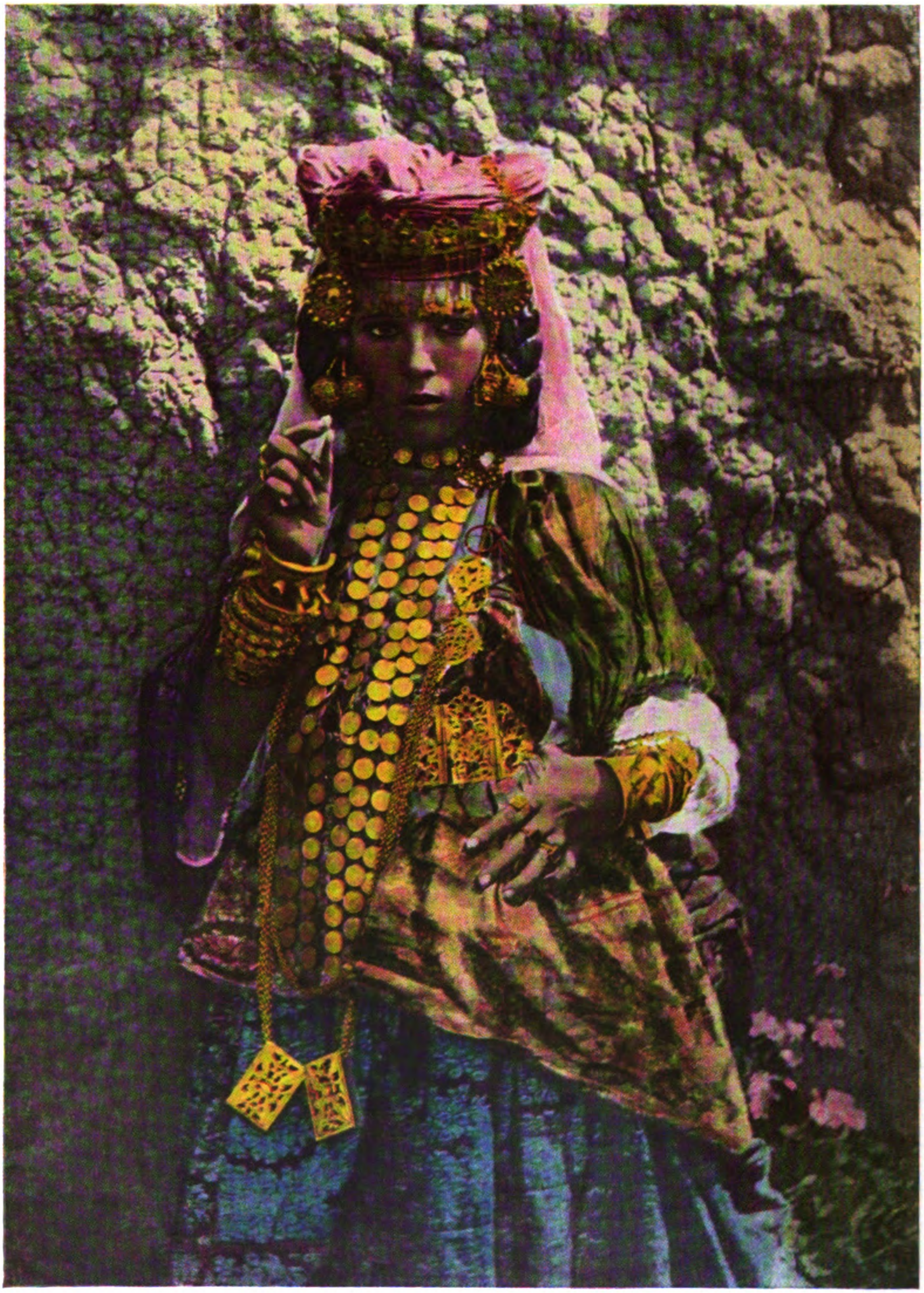
This old beggar of Tangier, Morocco, is singing a monotonous, wailing chant to attract the attention of the passers-by. He is a cheerful soul, however, and a pleasant contrast to some of the members of his brotherhood who capitalize their deformities.



Photograph and copyright by Austin A. Breed

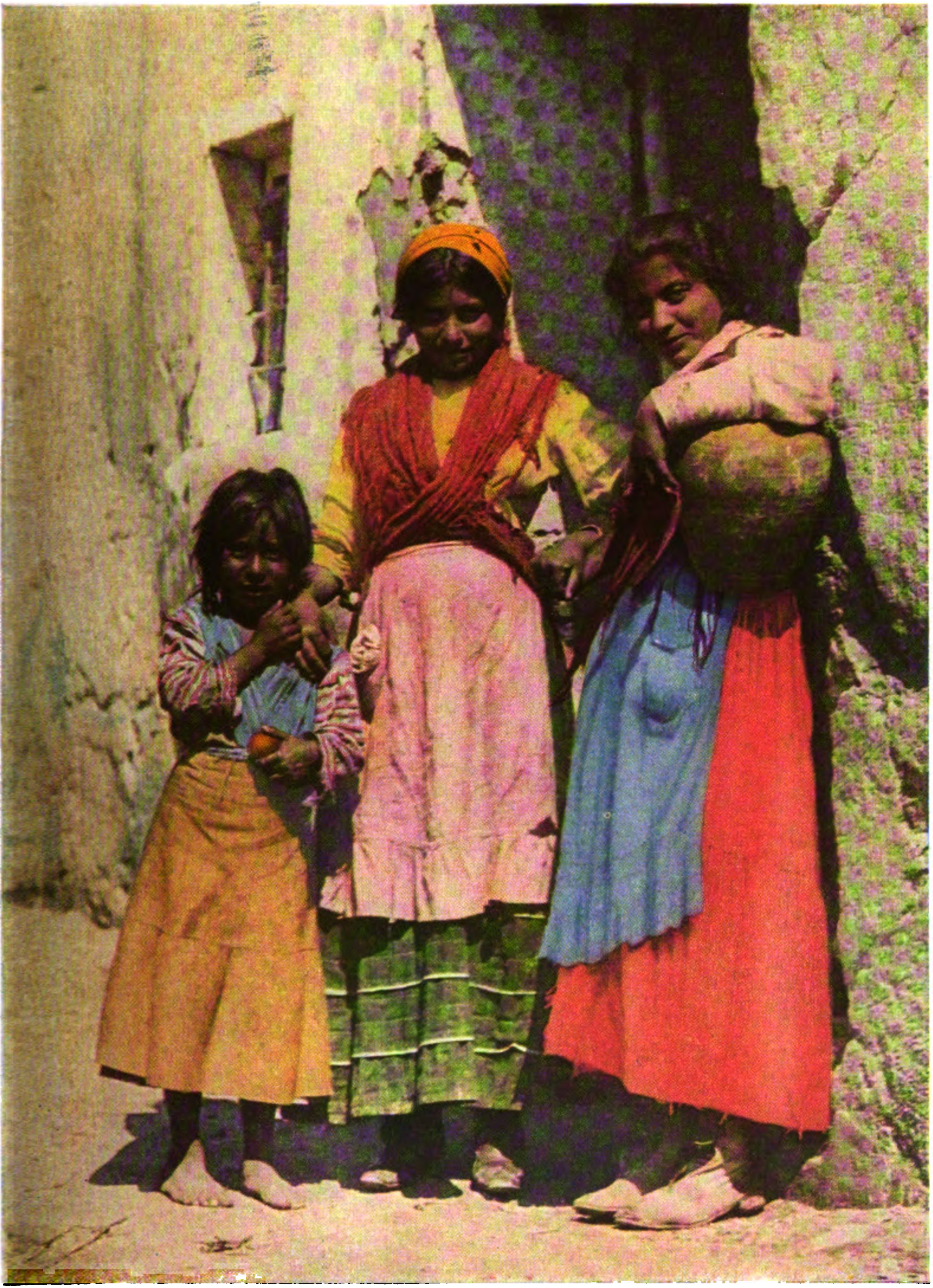
NIGHT IN TETUAN, MOROCCO

Even in daylight one is impressed with the mysterious atmosphere pervading the quiet streets in the old Moorish quarter of Tetuan. Here one is among a strange and alien people, widely different in religion and custom. The eerie quality of the streets is accentuated at night, and the soft radiance of the moonlight and even an occasional flickering lamp are welcome to the wayfarer.



"AN ARAB SHOD WITH FIRE"

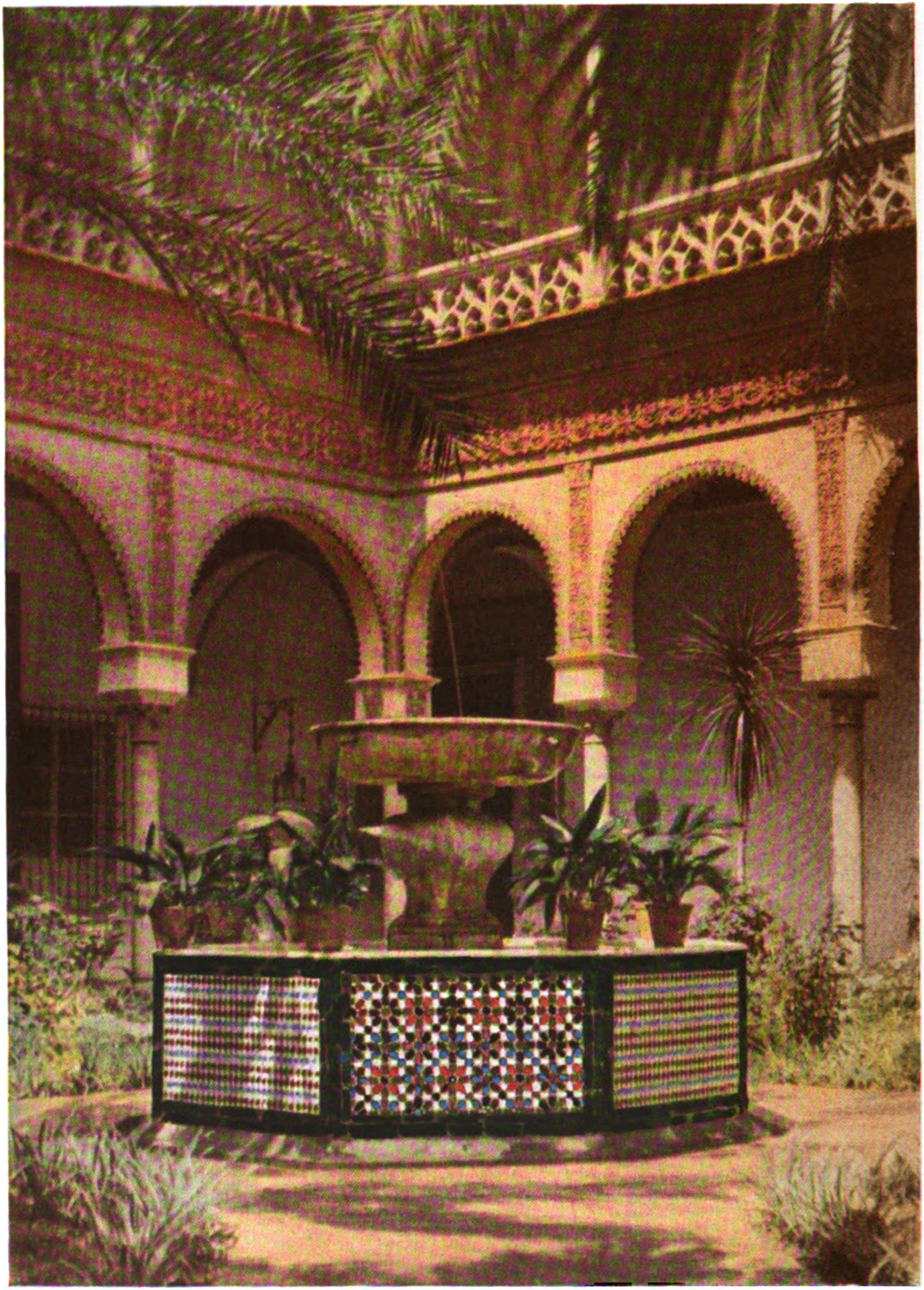
She is a dancer of Algeria and the slow, throbbing music of the Orient is just as necessary for her happiness as the jewels and coins with which she adorns herself.



Photograph and copyright by Austin A. Breed

SPANISH GYPSY GIRLS

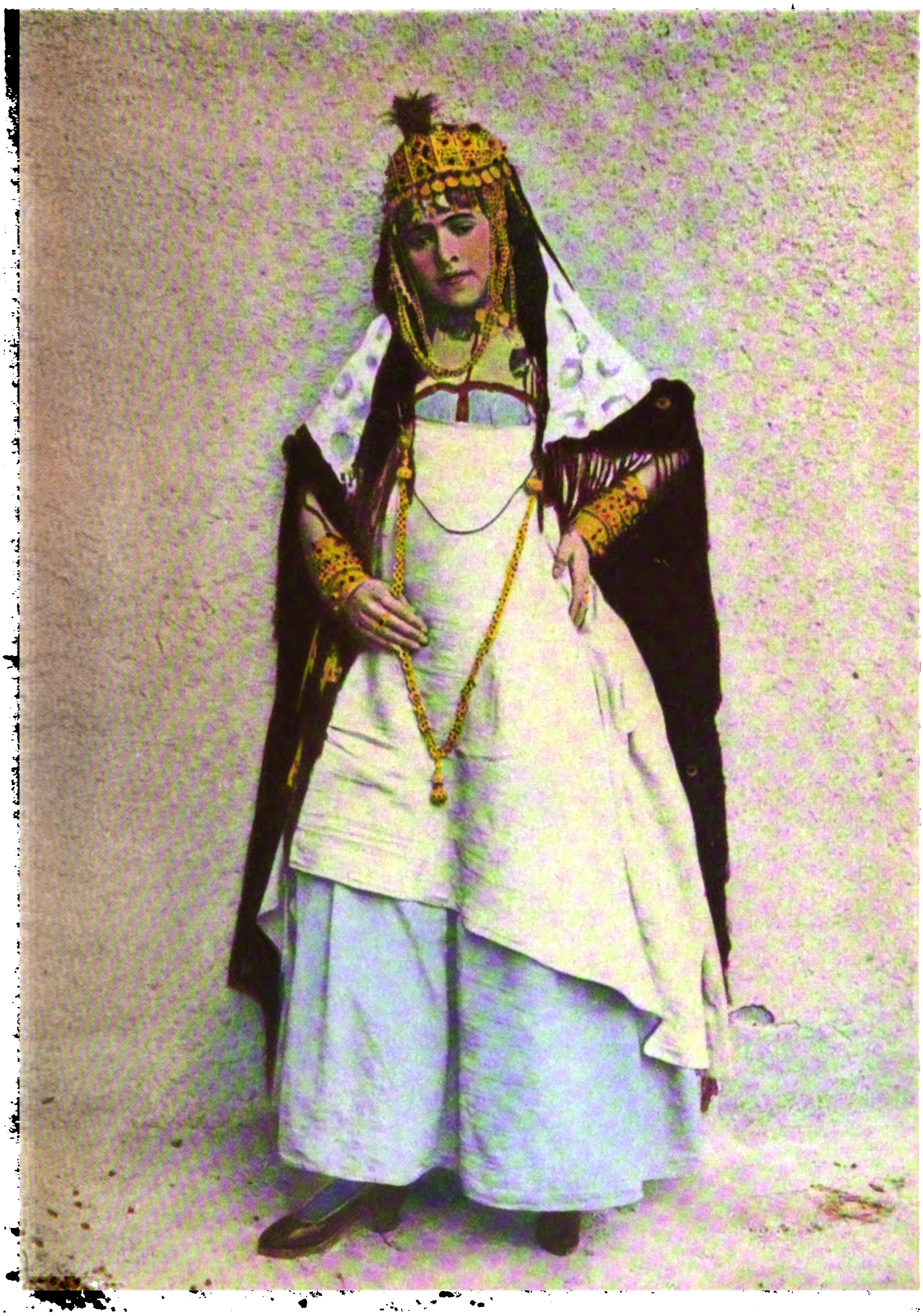
Picturesque in their rags, the girls and women "tell fortunes," and to those who refuse to have their fortune told is flung this quaint curse: "May you be made to carry the mail and have sore feet."



Photograph and copyright by Austin A Breed

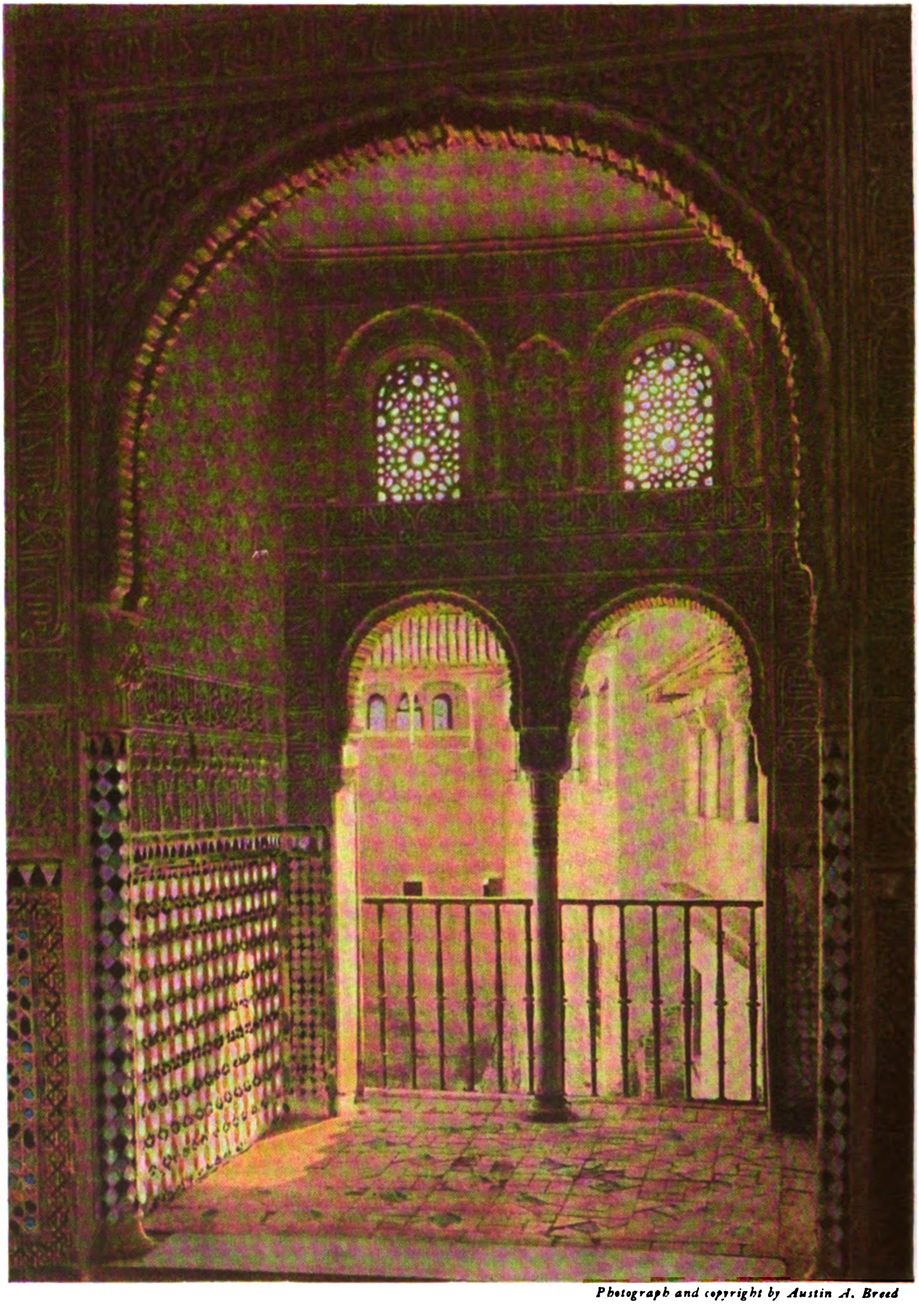
THE PATIO IN THE HOUSE OF THE DUKE OF ALBA, SEVILLE, SPAIN

A fitting companion of the beautiful Alcazar, Seville's rival of Granada's splendid Alhambra in beauty and in historical renown, is the magnificent palace of the Dukes of Alba. Dating from the fifteenth century, this palace, in its architecture, combines the soft lines of Moorish ideals and the sharp ones of Gothic conceptions, and is a fine example of the blending of the two.



A DANCER OF THE CAFÉS, ALGERIA

Their faces clouded with a dark paint to increase the natural effect of the desert sun on their skin, their nails darkened with henna, and their cheeks faintly tattooed in blue to show their caste, these beauties of the Ouled Naïl tribe furnish much local color in the crowded cafés of Northern Africa. Their costumes are gorgeous and their heavy ornaments are largely of gold and silver coins.



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FROM THE THRONE ROOM OF THE MOORS

One of the embrasures, or window alcoves, of the Hall of the Ambassadors in the Alhambra at Granada, Spain. In this room met the last assembly of the Moors, summoned by Boabdil to consider the surrender of Granada to the Spanish King Ferdinand just before Columbus discovered America. The visitor is impressed with the fact that the depiction of living things is avoided in Moorish architecture and that the decoration is accomplished with geometrical designs which are astonishingly beautiful.

A BEDOUIN BEAUTY

" Around her shone
The nameless charms unmarked by her alone,
The light of love, the purity of grace."—*Byron.*

Photograph by Earle Harrison

THE LURE OF MOTHER EGYPT

In addition to the romance and mystery of Egypt's mighty past, expressed on every hand by her crumbling monuments and age-old customs, [illegible] and the soft colors in pastel shades [illegible] which give to the [illegible] a never-to-be-forgotten impression of the Land of the Nile.

SOLDIERS OF THE SOIL

Our Food Crops Must Be Greatly Increased

By David F. Houston

United States Secretary of Agriculture

THE importance to the nation of a generously adequate food supply for the coming year cannot be overemphasized, in view of the economic problems which may arise as a result of the entrance of the United States into the war. Every effort should be made to produce more crops than are needed for our own use.

Many millions of people across the seas, as well as our own people, must rely in large part upon the products of our fields and ranges. This situation will continue to exist even though hostilities should end unexpectedly soon, since European production cannot be restored immediately to its normal basis.

It is obvious that the greatest and most important service that is required of our agriculture under existing conditions is an enlarged production of the staple food crops. Because of the shortage of such crops practically throughout the world, there is no risk in the near future of excessive production such as sometimes has resulted in unremunerative prices to producers. This is particularly true of the cereals and of peas, beans, cow-peas, soy-beans, and buckwheat.

THERE IS NO DANGER OF OVERPRODUCTION

In view of the world scarcity of food, there is hardly a possibility that the production of these crops by the farmers of the United States can be too great this year, and there is abundant reason to expect generous price returns for all available surplus.

The most effective step that may be taken to increase the production of these crops is to enlarge the acreage devoted to them in the regions where they are grown habitually. This expansion of acreage should be to the limit permitted by available good seed, labor, and equipment.

The placing of too great emphasis on production in new regions is inadvisable, since the introduction into a farm operation of a crop not usually grown frequently involves practical difficulties not easily foreseen nor quickly surmountable.

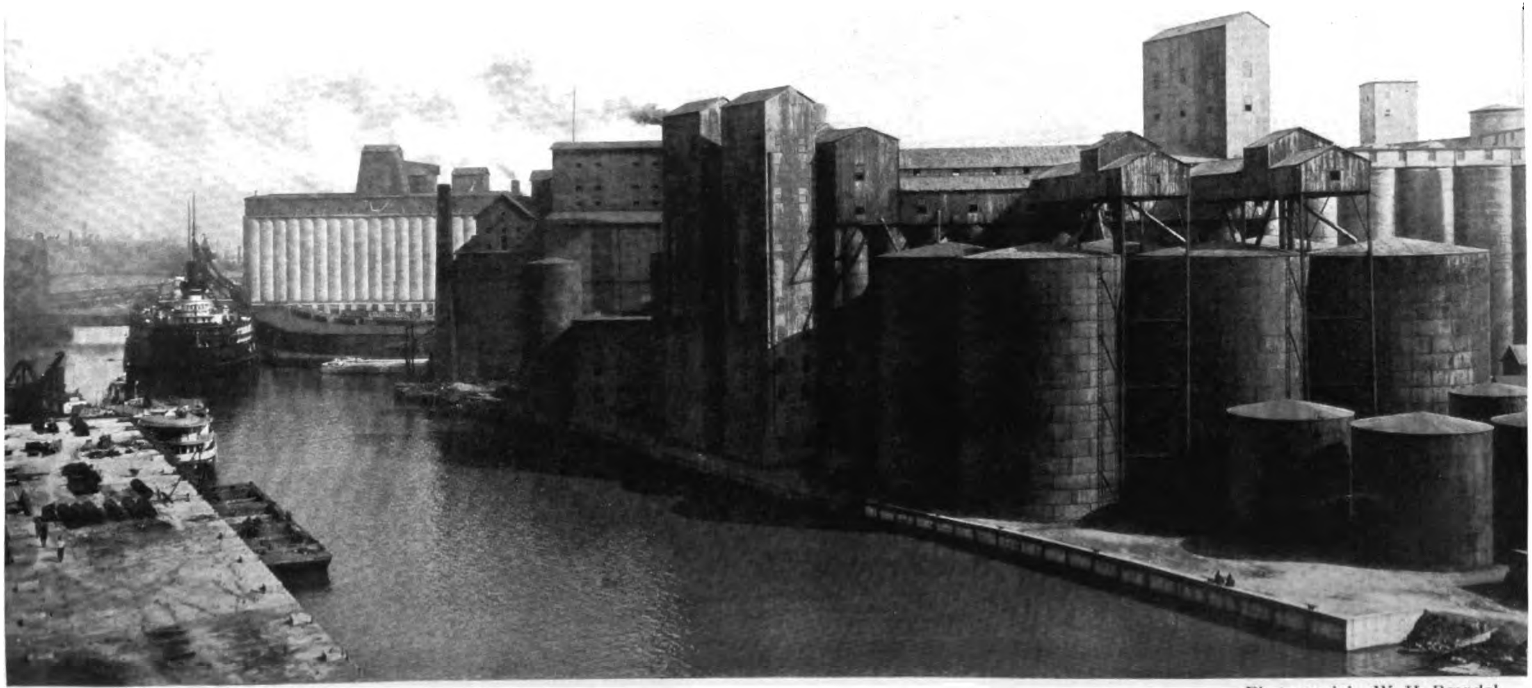
Taking the winter-wheat territory as a whole, winter killing has occurred to an extent very much greater than usual. This, obviously, if not compensated for in some way, will mean a material reduction in the supplies of our most important bread cereal. Where winter wheat has been damaged sufficiently to justify the abandonment of fields, it should by all means be replaced by spring-planted food crops, preferably small grains or corn.

The condition of our winter wheat, as shown by the Department in its report of April 7, is more than 25 per cent below the average "condition April 1" for the past ten years. This condition forecasts a production this year nearly 243,000,000 bushels less than the crop of 1915 and 52,000,000 bushels less than that of 1916, when our harvest of winter wheat was also poor.

What this loss means will be appreciated from the statement that one bushel of wheat contains sufficient energy to support the average working man for 15 days. By producing 240,000,000 bushels of winter wheat less in 1915 we have lost enough flour energy to support 10,000,000 people for one year. But as no man lives on bread alone, this shortage represents wheat sufficient for the needs of 20,000,000 men for a year.

THE USEFULNESS OF OATS AND BARLEY

If land intended for spring wheat cannot be put into good condition early enough for seeding, oats or barley can be substituted to good advantage in the sec-



Photograph by W. H. Brandel

A GROUP OF GRAIN ELEVATORS IN BUFFALO

Owing to the failure of Argentina's wheat crop this year and the continued interruption of Russia's export of her harvests, the world is now largely dependent on us for bread tions where these crops are known to do well. Barley can be relied on in the proved areas of Wisconsin, Minnesota, Iowa, the Dakotas, and Montana, while oats have a much wider range.

The ease with which barley may be substituted directly for wheat in human food and its usefulness to replace wheat milling by-products as feed in the production of the milk supply render its abundant production important. *Barley, where it succeeds, yields a larger weight of feed per acre than any other small grain crop.*

With an abundance of oats and barley available, much closer milling of wheat than at present could be practiced, if necessary, without endangering the milk supply, which constitutes so important an element in the dietary of consumers.

The place of rye under present conditions is an important one. The crop this year should be harvested and utilized with more than the usual care. Considerable acreage is planted in some sections for plowing under in the spring for green manure. Where conditions are suitable, part of this acreage might well be held for harvesting, and followed with a suitable summer or fall crop for plowing in later.

Buckwheat may be planted later than any similar crop, and often does well on old meadows or waste land that can be broken after the more exacting crops are planted.

In some sections, where experience has demonstrated that the cereals, except rye, cannot be relied on, buckwheat is a crop of considerable importance. The acreage could well be increased, especially in portions of New York, Pennsylvania, and New England, where the crop now is grown to a considerable extent.

Rice at present prices provides more food value for the money than most of the other cereals. Fuller appreciation of its value should stimulate production quickly in Louisiana, Texas, Arkansas, and California to an extent that would increase the total food supply greatly.

EXPAND THE CORN ACREAGE

Corn is the leading food and feed crop of the United States in geographic range of production, acreage, and quantity of product. The vital importance of a large acreage of this crop, properly cared for, therefore, is obvious. Because of the prices obtained for the last crop and the world demand for this grain, its profitableness to the American farmer during the approaching season is clear. The 105,954,000 acres planted to corn in 1916 yielded 2,583,000,000 bushels, or more than 400,000,000 bushels less than the large crop of 1915, and considerably less than the five-year average—2,732,457,000 bushels.

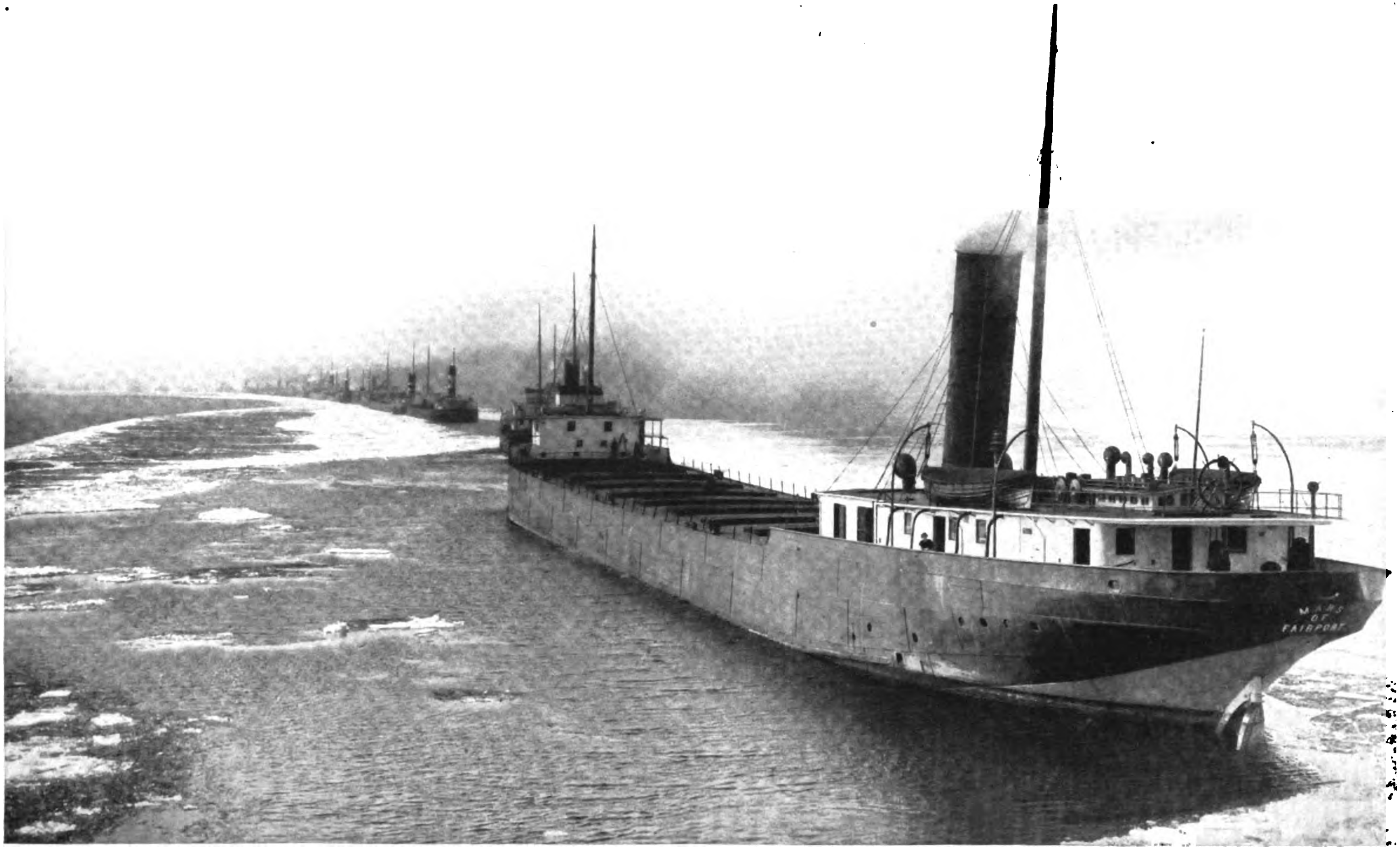
Conditions now warrant the planting of the largest acreage of this crop which it is possible to handle effectively.

Although fall is the proper time for breaking sod for corn, there are many unproductive and foul meadows and indifferent pastures in Illinois, Indiana, Ohio, and the Middle Atlantic and Northeastern States that, under existing conditions, can be broken and planted now to advantage. The resulting reduction of hay and pasture would be more than replaced by the corn stover, ensilage, and grain produced.

Earliness of maturity, other factors being equal, is advantageous in the case of practically all grain crops. Relatively early maturing varieties should be selected where possible, and the planting should be done at the earliest suitable date. With the small grains an advance of three or four days in stage of maturity frequently saves a crop from serious damage by rusts. With corn a similar advantage is obtained by early maturity, when severe droughts are encountered and when killing frosts occur toward the end of the season.

COW-PEAS AND SOY-BEANS VALUABLE FOR FOOD

The usefulness of cow-peas and soybeans as human food has been recognized only recently in this country. Existing conditions warrant the planting of all the available seed of varieties known to do well in the several sections. The soybean, in particular, has proved sufficiently resistant to cold in spring and to adverse weather during summer to warrant heavy



Photograph by A. E. Young

FOLLOWING THE LEADER: OPENING OF NAVIGATION THROUGH THE ICE, ST. MARY'S RIVER

Upon this watercourse, 40 miles in length, and the canals which parallel it is borne the vast volume of freight from the territory skirting Lake Superior. More than 20,000 vessels pass through these canals every year, bearing from Minnesota, Wisconsin, northern Michigan, and Ontario a world's food supply of grain and ore for armor plate and munitions to the various manufacturing cities on our Great Lakes, and thence to the Atlantic seaboard. The canals are notable for the fact that they carry the largest amount of water-borne traffic of all artificial waterways in the world. When the spring thaw begins the huge carriers take their southeasterly course in what seems an endless chain of commerce, each vessel a gigantic link of steel.

planting, especially throughout the South. The value of the beans for oil production, as well as for human food, has become recognized so quickly and so generally during the past year that the crop has acquired a commercial standing far in excess of its previous status.

The high food value of field beans and the shortage of supply due to the light yields of 1915 and 1916 render them of great importance in the regions to which they are adapted. This is especially the case in portions of the New England States, New York, Michigan, and California, where the chief supply has been grown for many years, and in sections of Idaho, Colorado, New Mexico, and other Western States where beans have attained importance recently.

The seed supply, while high in price, is well distributed.

RESERVE SUFFICIENT HAY, FORAGE, AND PASTURE LAND

A deficiency of hay and forage for the next winter would jeopardize the future meat and dairy supplies of the country and result in a shortage of roughage for military draft and saddle animals.

In regions where dairying dominates, the full acreage of clover, alfalfa, and the grasses that is in productive condition should be maintained. Under the conditions prevailing in most dairying sections, these crops can be carried with less man-power than that required for tilled crops.

The older, thinner, and less productive grass lands, however, frequently can be made to produce much larger yields of feed in corn than if left, as they are, in unproductive grass. The seeding down of small grain fields for next year's mowing should by no means be neglected, for the maintenance of effective rotations of crops will be found as important in the future as in the past.

For the Gulf States, perhaps no forage crop of which the available seed supply is relatively abundant exceeds the velvet bean in potential value. This legume possesses also the ability to make a crop when planted relatively late.

Seed potatoes should be conserved by planting on the best lands available for them and planning for thorough tillage and protection of the crop against disease and insect pests.

POTATOES AND VEGETABLES

Potatoes can be grown most advantageously near the centers of population in the Northern States, where transportation cost may be reduced to a minimum. This crop is capable of quick and large increase of production when conditions are favorable.

There is, however, considerable risk of unprofitable production of potatoes when they are grown at long distances from the consuming markets, owing to their disproportionate weight and bulk in comparison with the cereals.

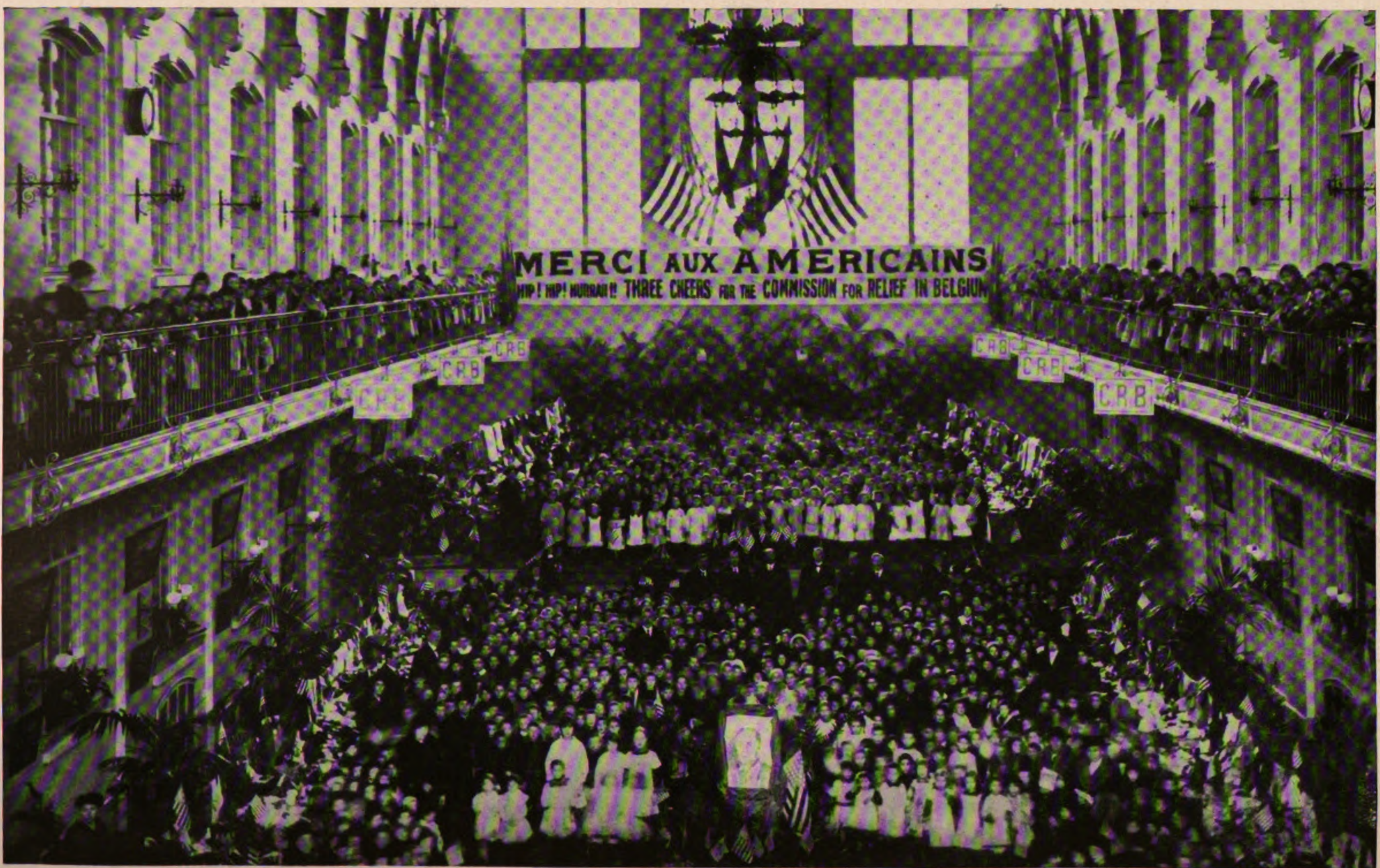
Such vegetable crops as carrots, rutabaga turnips, onions, and cabbage are worthy of much more attention than they generally receive, especially in the eastern United States. All these crops are capable of large production on suitable land, under intensive culture, throughout the more densely populated portions of the country. The supply of seed is ample and their culture comparatively simple.

The holding of these vegetables for the winter food supply is relatively easy where suitable, inexpensive pits, cellars, or lofts are prepared in time.

THE OLD PRACTICE OF DRYING VEGETABLES IS REVIVED

The practicability of quickly drying vegetables for longer preservation was demonstrated on a large scale last year in western New York, where quantities were dried in the available apple evaporators and in rapidly constructed dry-kilns, for export as army supplies.

This was a repetition of the experience of the Civil War period, when desiccated vegetables assumed considerable importance in the army ration, and the equipment required for their preparation proved the forerunner of our present fruit-drying equipment. Existing conditions warrant heavier planting than usual of staple winter vegetables in the sections where canneries and fruit evaporators exist, and probably in some sections


MERCI AUX AMERICAINS
HIP! HIP! HURRAH!! THREE CHEERS FOR THE COMMISSION FOR RELIEF IN BELGIUM
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Photograph from Paul Thompson

A DEMONSTRATION OF BELGIAN APPRECIATION

Having destroyed practically all of innocent Belgium except that tragic nation's indomitable spirit, imperial Germany struck yet another blow at this fallen victim when she forced hostilities upon the United States, for America's Commission for Relief in Belgium fed the starving, succored the wounded, and comforted the dying from the early days of the struggle until a few weeks ago, when forced to leave this grateful people to the tender mercy of their enemies, whose action in sinking at sea a number of ships loaded with food and clothing is significant of what may now be expected.

where the provision of such facilities later in the season may be justified.

In the southern half of the country perhaps no crop has larger possibilities for quick increase of production of food for both men and animals than the sweet potato. Methods of handling and storing this product, demonstrated and advocated by the Department workers for several years, make possible much fuller utilization of it than has occurred generally in the past.

The peanut, in many sections of the South, also is capable of greatly enlarged production, with little risk of oversupply, as it is in demand for oil and peanut-butter manufacture, as well as for direct use as food, both for man and hogs.

INCREASE FARM PRODUCTION OF VEGETABLES AND POULTRY

The high prices for foodstuffs that have prevailed during the last few months have stimulated interest in the increase of home supplies of vegetables, poultry, and dairy products on farms.

This interest has been quickened most noticeably in the South, where for several years this Department and the States, through their extension workers, have urged such an increase as necessary for economic reasons, even under normal conditions. Other parts of the country have responded to these appeals, but emphasis on this feature should be continued by all agencies in position to operate effectively.

Through increased attention to poultry on farms, it is possible to add quickly and materially to the food supply. Because of the importance of an increased supply of eggs, under present exigencies, farmers should not market hens of the egg breeds, such as the leghorns, which are less than three years old, or of the larger breeds which are less than two years old.

By the immediate preservation of eggs for home consumption through the use of water glass or lime water, larger supplies of fresh eggs may be made available for marketing later in the season, when production is less and prices higher.

Every person who raises chickens, from the novice to the poultry husbandman, should see that infertile eggs are produced and all surplus marketed promptly, so as to eliminate waste through spoilage.

When conditions render it feasible, small flocks of poultry should be kept by families in villages, towns, and especially in the suburbs of large cities. The need for this extension of poultry-raising is particularly great where consumption exceeds production, as in the Northeastern States.

Through utilization of table waste, scraps, and other refuse as poultry feed, much wholesome food in the form of eggs and poultry for home use may be produced at relatively low cost.

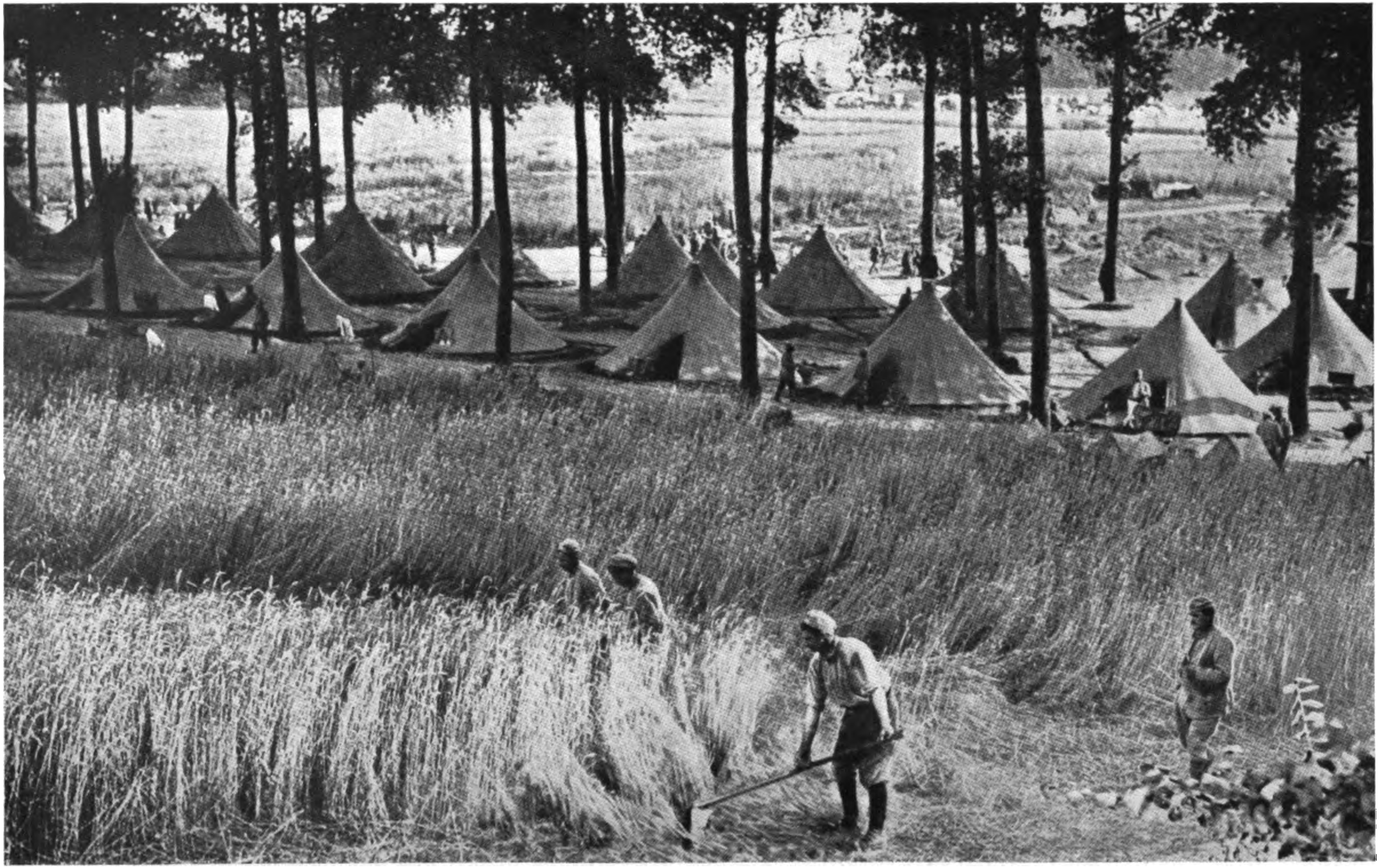
Many families in the villages and on the outskirts of cities also should consider the advisability of keeping a pig, if sanitary regulations permit. In most cases, however, it will be profitable to keep a pig only when a sufficient surplus from the household and the garden is available to furnish a considerable portion of the pig's food.

Consumers living in villages and in the suburbs of cities do not appreciate sufficiently the possibility of adding materially to their food supply by utilizing suitable idle soil in yards, vacant lots, and unused outlying fields. The total contribution to the food supply of families and communities which can be brought about through such activities is great.

Gardening is peculiarly an activity in which the family and the community may share with resultant mutual helpfulness and benefit.

The duty of the individual farmer, at this time, is to increase his production, particularly of food crops. If he has control of tillable land not in use, or money lying idle, or labor unemployed, he should extend his operations so as to employ those resources to the fullest extent.

This does not mean that he should rob his land, waste his capital, or expend his labor fruitlessly, but that by wise planning and earnest effort he should turn out a greater quantity of food crops than ever before. He will not lose by it, and he will perform an important service in supporting his country in the task that lies before it.



FRENCH SOLDIERS HARVESTING IN THE DEPARTMENT OF THE MARNE

When the day's or the week's or the fortnight's work in the trenches is done, the indefatigable "poilu" finds recreation in laying aside his rifle and bayonet for rake and sickle, making grain to the music of the enemy's shrapnel and shell.

THE TIES THAT BIND

Our Natural Sympathy with English Traditions, the French Republic, and the Russian Outburst for Liberty*

By Senator John Sharp Williams

I JOIN the President in having no hostility to the German people. I spent two and a half years of my life with them and I love them—a whole lot of them. The man who inhabits the borders of the Rhine, the man who inhabits Bavaria and Wurttemberg—easily moved to tears, and easily moved to laughter, and easily moved to rage—is a man whom I have learned to love; and I have always believed that this war in Europe, brought on by the obstinate refusal of the Kaiser to leave either to a tribunal of arbitration or to a concert of Europe the question at issue between Austria and Serbia, and inspiring Austria to refusal, is a proof of the truth of the adage, "Whom the gods would destroy, they first make mad."

I am a little tired, Mr. President, of utterances like that of the Senator in denouncing the Entente powers. Who are the Entente powers? France, "La Belle France," "Sunny France," sweet France—the most companionable people on the surface of the earth; the country of Lafayette and Rochambeau and De Grasse; the country of Victor Hugo and Molière and Racine; the country of the men who imitated our American example when they flung to the breeze banners with "Liberty, equality, fraternity" inscribed upon them, although they carried the banner to a bloody end that was not justified—to a Reign of Terror against those whom they deemed traitors at home—which has been exceeded by the German Reign of Terror in Belgium, greater in atrocity and less provoked.

Then the gentleman undertakes to "twist the British lion's tail." We have had a whole lot of demagogues who habitually do that. It started soon after the Revolution, but not with those of us whose forefathers fought under George Washington in the Continental line to establish American independence.

The War of Independence was really carried on against the will of the English people by the German king, who happened to be then the King of Great Britain, with hired Hessians, who were also Germans, against the leadership of that greatest Englishman that America ever produced—George Washington.

Edmund Burke, the elder Pitt, who was then Lord Chatham, and Charles James Fox came much nearer representing real English sentiment than the Hanoverian King George III.

OUR DEBT TO ENGLAND

I have a hearty contempt for the man who does not know his environment and his kindred and his friends and his country. It may be narrow, but I love my plantation better than any other plantation, my county better than any other county, my State better than any other State in the Union, and my country better than any other country in the world, and my race—the English - speaking race—better than any other race.

Whence do we get our laws? Whence do we get our literature? Whence do we get our ethical philosophy? Whence do we get our general ideas of religion? From the people who sired our fathers before they came here.

I am tired of men telling me—Welshman, Scotchman, Englishman in blood, as I am—that "the hereditary enemy of the United States is England" or Wales or Scotland—that it is Great Britain. Magna Charta, the Declaration of Rights, the Bill of Rights included in the Constitution in its first ten amendments—the very principles embodied in the Constitu-

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*An address to the U. S. Senate April 4, 1917, specially revised by Senator Williams for the National Geographic Magazine.

MESSENGERS OF THE AIR: THE FRENCH ARMY AUTO AT THE FRONT FOR CARRIER-PIGEONS

tion derived from colonial experience under English rule—all come from Britain, a country whose high priest was John Milton, whose sweet singer was Burns, whose great intellect was Shakespeare, whose great warriors for liberty were Hampden and Sidney and Simon de Montfort.

I would rather have heard the Senator eulogize the best offshoots of that branch, and those offshoots right here in Canada and Australia and in South Africa, than to have heard his eulogy of Prussia. They are the branches of the old stock that had the courage to leave their neighborhood and environment and seek out a new habitat and adapt themselves to it, and who won the American fight for liberty and equal opportunity—who, like our ancestors, plowed the field with the rifle on their shoulder, while they held the plow with the other hand. They were English and Scotch and Welsh and Irish.

GEORGE WASHINGTON WAS ENGLISH

It was an Englishman of the Englishmen, as far as his blood is concerned—George Washington, of Mount Vernon—who would have preferred to have the people speak of him as "George Washington of Mount Vernon," his plantation name, rather than by some other name—who led the American forces that fought against the dictates of a German-blooded king, backed up by Hessian hirelings. George Washington warned against entangling alliances and warned against another thing—an infuriate and insensate hatred of some particular people—because a man with that poison in his blood is incapable of being a real, good American citizen in a country where the melting pot will finally operate.

I do not like the arraignment which the Senator made of the English people or the English Government, even more democratic than our own. I do not like it because it was not correct historically, because it was not true in sentiment, and because it was an insult to the gentlemen from whose loins I sprang, when they themselves fought against people of like blood who wanted to oppress them. What did they fight for? They fought for this—Thomas Jefferson and old Samuel Adams were pretty nearly the only ones of them who then had a larger vision—George Washington and Lincoln and

THE AUTOMOBILE SEARCHLIGHTS WHICH ARE MOST EFFECTIVE IN SEARCHING OUT THE ENEMY'S ZEPPELINS, THUS AIDING IN BRINGING THEM DOWN

Greene and the balance of them fought for "the inherited rights of Englishmen, belonging," as they contended, "to Englishmen in America as well as to Englishmen in England." Those "inherited rights of Englishmen" were expressed in the Constitution of the United States.

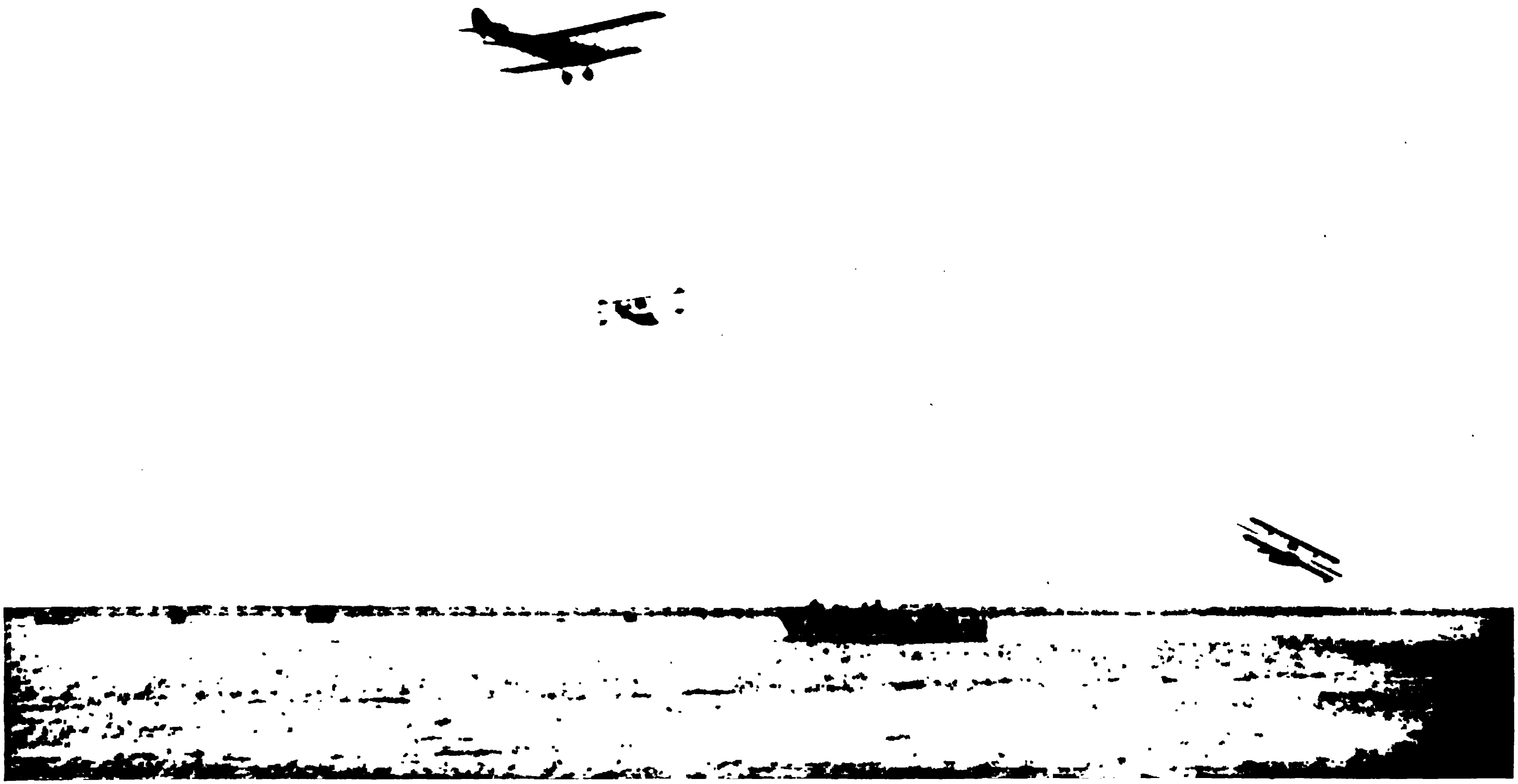
Thomas Jefferson and Samuel Adams had a bit broader vision and view: they went a bit farther; and Thomas Jefferson's vision went into the Declaration of Independence, which includes not only the rights of Englishmen, but "the rights of man," which were later embodied in the Declaration of the French Republic.

OUR DISLIKE OF ARROGANCE

Somebody said to me the other day, "You seem to be angry and in a passion about this German question," and I said, "I am." Next to the indignation of God is the righteous indignation of a true man with a soul in him and red blood, instead of bluish milk, in his veins, against the German assumption of German superiority and arrogance and injury and insult; but, above all, insult.

I know it will sound to a lot of you curious, but the thing I believe that I resent most is what Germany said to us about painting our ships like the display window of a barber shop, when we could go, by her allowance, once a week into one port in one country, more than I do even the sinking of our ships and the drowning of our citizens. I think nearly every gentleman resents insult more than he resents injury. A man who comes upon my place and goes through a pathway that is not a public highway, or who incidentally destroys some property that is growing, I can forgive; but one who comes up to me and tells me that he is going to do it whenever he pleases, because he is stronger than I am, is a man whom I cannot forgive.

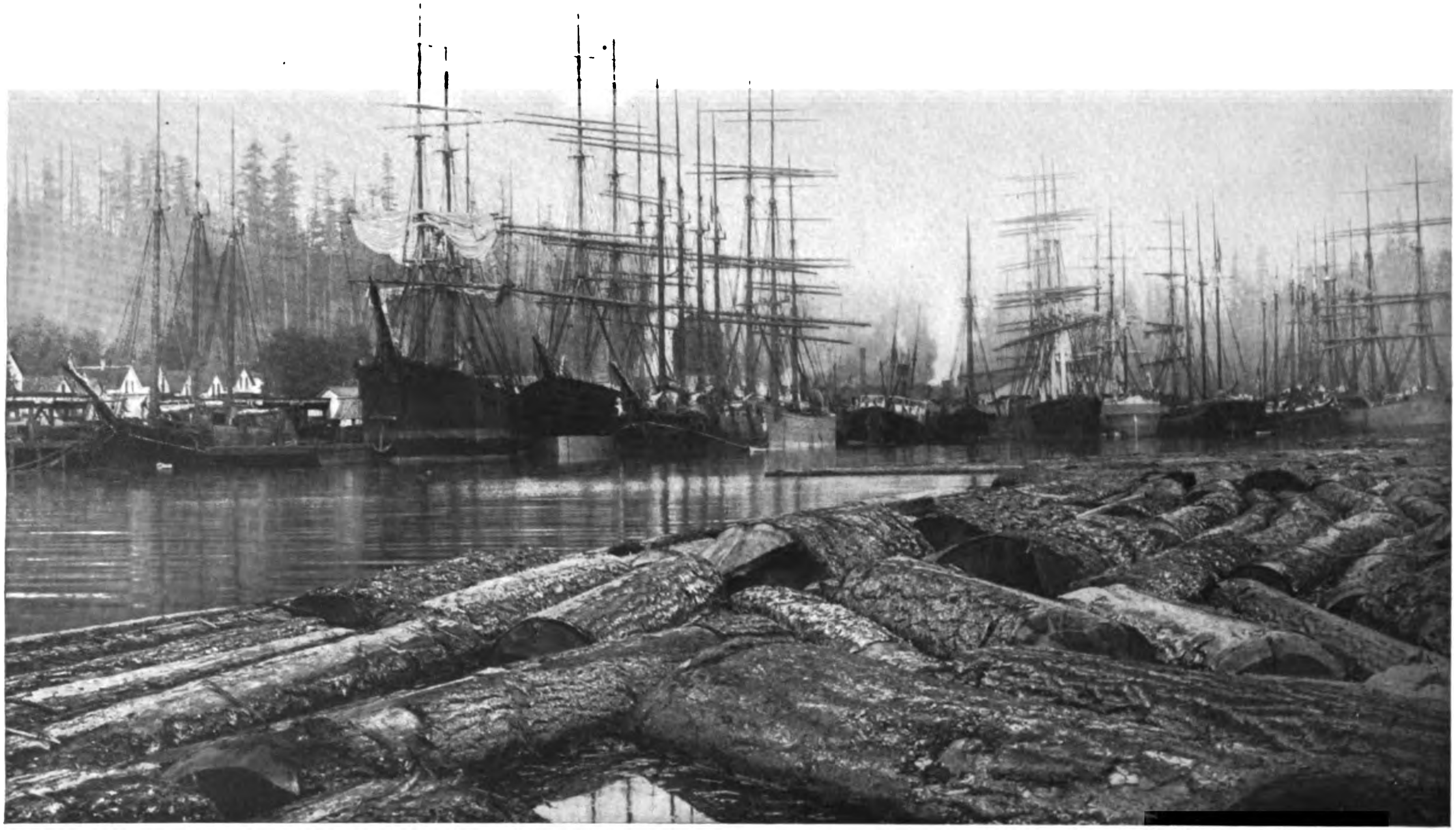
Germany thought she was stronger than we; and she is right just now. These ready nations assume a great deal in connection with the unready nations. We two branches of the English-speaking race—across the sea and here—have always been unready for war, thank God, and shall remain so, because we think it



Photograph from Jane Watts Fisher

AMERICAN INGENUITY: FIRST IN THE AIR, FIRST IN THE WATER

The inventive genius of America is reflected in this illustration, which shows three types of American-born craft at Miami, Florida—an airplane, or military tractor, and two flying boats, together with the fastest 50-foot, gasoline-driven express cruiser yet built, the "Shadow III," an ideal scout boat for locating unfriendly submarines along the well-nigh unprotected South Atlantic coast.



Photograph by Curtis and Miller

LUMBER CARRIERS AND THEIR CARGOES AT PORT BLAKELEY MILL, PUGET SOUND, WASHINGTON

Before the outbreak of the European conflict the days of the wooden barks, brigantines, and schooners seemed numbered, for steel ships were rapidly driving old-style vessels from the lanes of commerce. But the war has given the wooden ship a remarkable new lease of life, and our mills on both the Atlantic and Pacific seaboards are working 24 hours a day supplying the shipbuilders with the material needed to keep the American flag flying on the Seven Seas. The United States Government has ordered 1,000 wooden ships built with all haste to carry food and munitions to the British, French, Italians, and Russians.

is better to call out the full power of the people when the emergency comes than it is to keep them weighted down for 20 years in order to do one year's fighting. As a rule, people do one year's fighting out of each 20 years of their actual existence. We have done less, of course.

Which would you rather do — fight Prussia now, with France and England and Russia to help you, or fight her later, when she is foot-loose, by ourselves? You have got to do one or the other.

A whole lot of people tell me that the nations of the Entente are bound to win the war in Europe. I tell you they are not. I tell you that with that line, almost like a right-angle triangle, with a salient here, with Robert E. Lee behind that line, with a capacity to reinforce one part of it from the other, while the enemy has to go all around, he would win that war.

I tell you, furthermore, that the Italian barrier cannot be protected if there are enough German people put in, and when once it is broken France will be attacked upon the south—unfortified and undefended—on the Italian side.

I tell you, moreover, that if Germany does win that fight upon the Continent of Europe—with Belgium already a vassal State, Holland to become one, France likewise, by defeat—with all their forts and naval stations and shipyards open as well as her own, she will begin to get ready to whip us, unless England's fleet prevents it.

Now, Great Britain can, by sea-power, defend herself almost indefinitely — defend herself long enough for us to get ready to help her defend us. You can put it in your pipe and smoke it—this fact: whether you are going to fight Prussia now, with assistance, or whether you are going to fight her later, when we have no assistance, you have got to fight her.

THE OTHER NEUTRAL NATIONS

Then the Senator says that "the other neutral nations are not taking the course that we are taking." No; they are not. But why? There is Norway, the land of the free and the brave, and the true country whence the Normans came and whence almost all the blue blood of Europe's rulers came. Why does not Norway resent these insults? Oh, Mr. President, it is a sad and tragic thing; but Norway is too weak. Why does not Denmark act? Because her very hands are in the mouth of the mad dog.

Why does not Holland act? Again, because she dares not. German troops are lined across her border, ready to walk over her prostrate body as they walked over the body of Belgium; to shoot her civilians if they express sympathy for themselves against the German enemy; to burn down her schools, her libraries, and her cathedrals, as the Germans burned down those in Belgium. Holland is cowed.

A brave race are the Dutch. They faced Spain in its pride and power, with the help of England. They fought and died for liberty to speak and to worship. But, Mr. President, almost any people in the world, no matter how brave, now and then can be cowed and for a time act like whipped slaves. It is the most tragic and pathetic thing in all history when that happens either to a man or to a nation.

I have spoken of France; I have spoken of Great Britain. How about Russia? Up to a short time ago, so far as Russia is concerned, any animadversions that the Senator chose to make would have met with a good deal of sympathy upon my part; but once more I see a people throwing off their shackles, who have at last "declared" that they are free. Time will test the question whether they can prove that they are worthy to be free or not; but they have at least expressed the desire and the intention to be free, and, as a rule, where the desire and the intention go, the fact exists.

We have got to go into this war now. and we are going into it for all we are worth, for all our capital is worth, for all our bodies are worth, for all that we have and all that we are; and I, for one, hope that we will never make peace until the universal decree of the civilized world has gone forth to the effect that the Hapsburgers and the Hohenzollerns have ceased to reign.

The Hohenzollerns have been able; they have been efficient; they have been all that; but a race infected with the poisonous idea that it is ruling by divine ordinance is crazy.

VOL. XXXI, NO. 4 WASHINGTON APRIL, 1917

THE NATIONAL GEOGRAPHIC MAGAZINE

DO YOUR BIT FOR AMERICA

A Proclamation by President Wilson to the American People

MY FELLOW-COUNTRYMEN:

The entrance of our own beloved country into the grim and terrible war for democracy and human rights which has shaken the world creates so many problems of national life and action which call for immediate consideration and settlement that I hope you will permit me to address to you a few words of earnest counsel and appeal with regard to them.

We are rapidly putting our navy upon an effective war footing and are about to create and equip a great army, but these are the simplest parts of the great task to which we have addressed ourselves.

There is not a single selfish element, so far as I can see, in the cause we are fighting for. We are fighting for what we believe and wish to be the rights of mankind and for the future peace and security of the world.

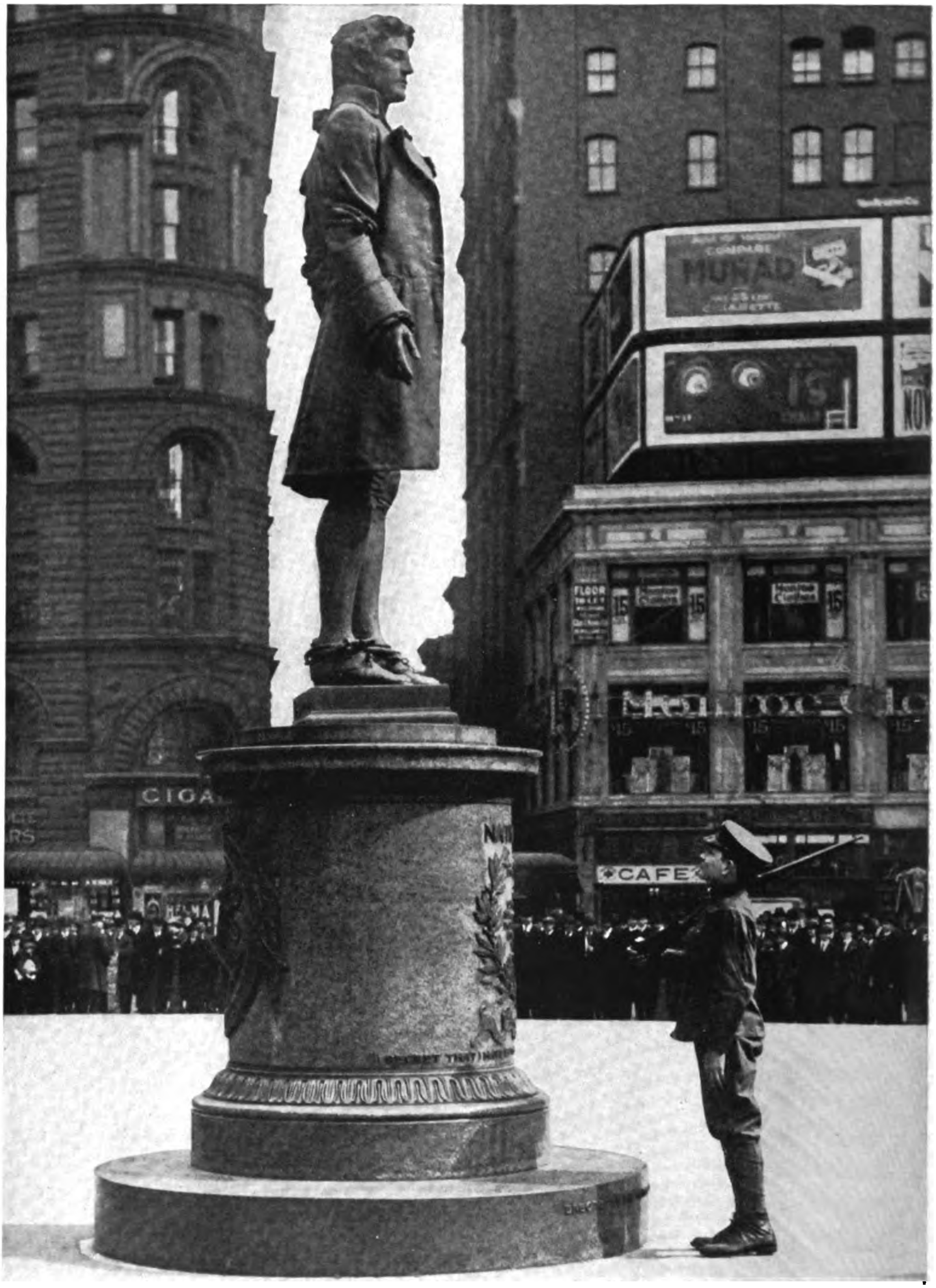
To do this great thing worthily and successfully we must devote ourselves to the service without regard to profit or material advantage and with an energy and intelligence that will rise to the level of the enterprise itself. We must realize to the full how great the task is and how many things, how many kinds and elements of capacity and service and self-sacrifice it involves.

These, then, are the things we must do, and do well, besides fighting—the things without which mere fighting would be fruitless:

We must supply abundant food for ourselves and for our armies and our seamen, not only, but also for a large part of the nations with whom we have now made common cause, in whose support and by whose sides we shall be fighting.

THE THOUSAND NEEDS FOR VICTORY

We must supply ships by the hundreds out of our shipyards to carry to the other side of the sea, submarines or no submarines, what will every day be needed there, and abundant materials out of our fields and our mines and our factories with which not only to clothe and equip our own forces on land and sea, but also to clothe and support our people, for whom the gallant fellows under arms can no longer work; to help clothe and equip the armies with which we are coöperating in Europe, and to keep the looms and manufactories there in raw material; coal to keep the fires going in ships at sea and in the furnaces of hundreds of factories across the sea; steel out of which to make arms and ammunition, both here and there; rails for worn-out railways back of the fighting fronts; locomotives and rolling stock to take the place of those every day going to pieces; mules, horses, cattle, for labor and for military service; everything with which the people of Eng-



Photograph by International Film Service

BEFORE THE STATUE OF NATHAN HALE, CITY HALL SQUARE, NEW YORK

A patriot of 1917 becoming imbued with the patriotism of the Revolutionary hero who, upon being led forth to die, voiced the inspiring regret that he had but one life to lose for his country.

land and France and Italy and Russia have usually supplied themselves, but cannot now afford the men, the materials, or the machinery to make.

It is evident to every thinking man that our industries—on the farms, in the shipyards, in the mines, in the factories—must be made more prolific and more efficient than ever, and that they must be more economically managed and better adapted to the particular requirements of our task than they have been; and what I want to say is that the men and the women who devote their thought and their energy to these things will be serving the country and conducting the fight for peace and freedom just as truly and just as effectively as the men on the battlefield or in the trenches.

SOLDIERS BEHIND THE FIRING LINE

The industrial forces of the country, men and women alike, will be a great national, a great international, service army—a notable and honored host engaged in the service of the nation and the world, the efficient friends and saviors of free men everywhere.

Thousands — nay, hundreds of thousands—of men otherwise liable to military service will of right and of necessity be excused from that service and assigned to the fundamental, sustaining work of the fields and factories and mines, and they will be as much part of the great patriotic forces of the nation as the men under fire.

I take the liberty, therefore, of addressing this word to the farmers of the country and to all who work on the farms: The supreme need of our own nation and of the nations with which we are coöperating is an abundance of supplies, and especially of foodstuffs.

The importance of an adequate food supply, especially for the present year, is superlative. Without abundant food, alike for the armies and the peoples now at war, the whole great enterprise upon which we have embarked will break down and fail.

The world's food reserves are low. Not only during the present emergency, but for some time after peace shall have come, both our own people and a large proportion of the people of Europe must rely upon the harvests in America.

WHERE THE FATE OF THE WAR RESTS

Upon the farmers of this country, therefore, in large measure rests the fate of the war and the fate of the nations. May the nation not count upon them to omit no step that will increase the production of their land or that will bring about the most effectual coöperation in the sale and distribution of their products?

The time is short. It is of the most imperative importance that everything possible be done, and done immediately, to make sure of large harvests.

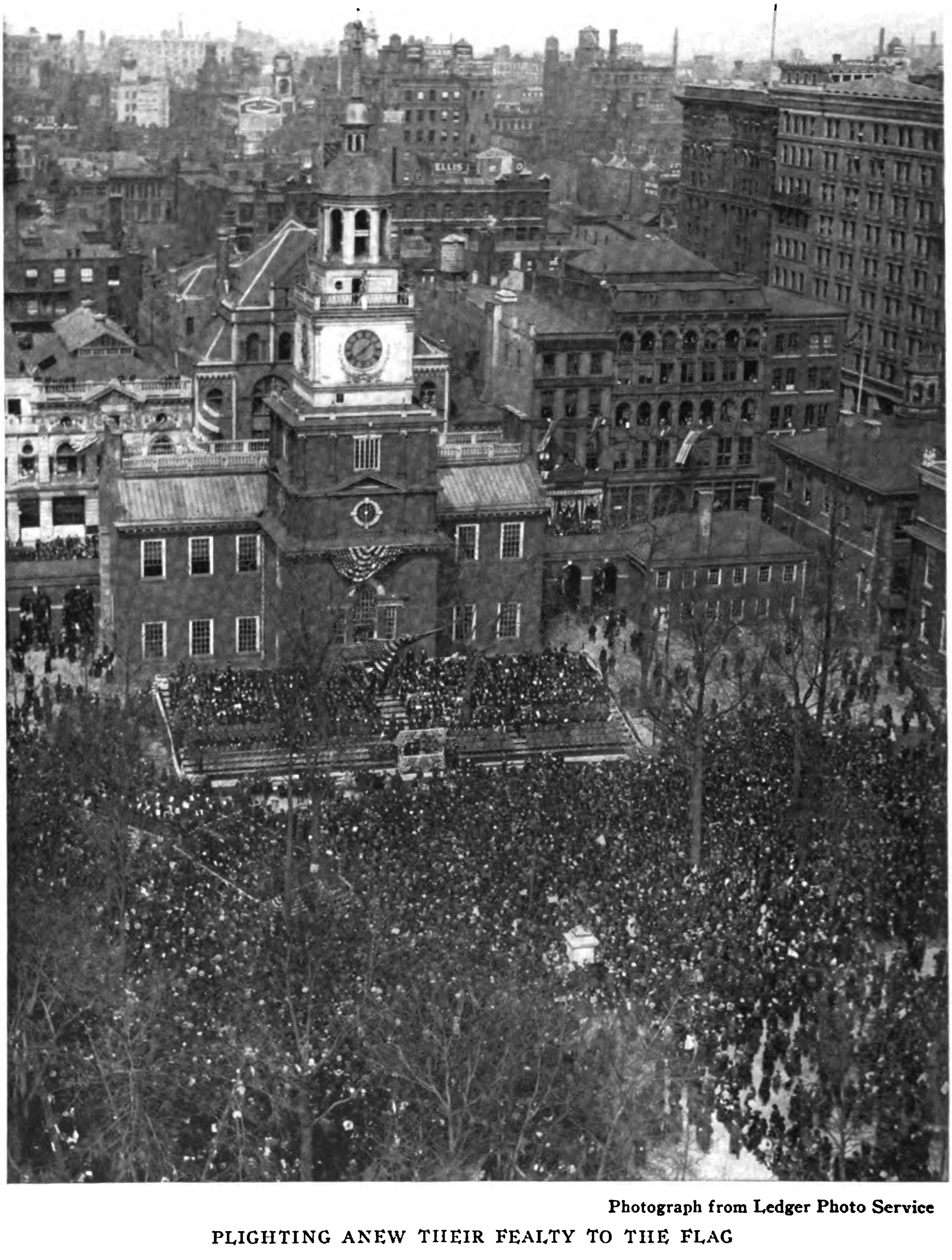
I call upon young men and old alike and upon the able-bodied boys of the land to accept and act upon this duty—to turn in hosts to the farms and make certain that no pains and no labor is lacking in this great matter.

I particularly appeal to the farmers of the South to plant abundant foodstuffs, as well as cotton. They can show their patriotism in no better or more convincing way than by resisting the great temptation of the present price of cotton and helping, helping upon a great scale, to feed the nation and the peoples everywhere who are fighting for their liberties and for our own. The variety of their crops will be the visible measure of their comprehension of their national duty.

The Government of the United States and the governments of the several States stand ready to coöperate. They will do everything possible to assist farmers in securing an adequate supply of seed, an adequate force of laborers when they are most needed, at harvest time, and the means of expediting shipments of fertilizers and farm machinery, as well as of the crops themselves when harvested.

A DEMOCRACY'S CHANCE TO MAKE GOOD

The course of trade shall be as unhampered as it is possible to make it, and there shall be no unwarranted manipulation of the nation's food supply by those who handle it on its way to the consumer. This is our opportunity to demonstrate the efficiency of a great democracy, and we shall not fall short of it!



Photograph from Ledger Photo Service

PLIGHTING ANEW THEIR FEALTY TO THE FLAG

Assembled in Independence Square, Philadelphia, thousands of patriotic Americans recently pledged their unanimous support to the President in the following stirring resolutions:

"Meeting on the eve of a great crisis affecting our national life and on the sacred ground where, 141 years ago, the fathers of the Republic declared belief in the unalienable right of man to life, liberty, and the pursuit of happiness, we citizens of Philadelphia, following the traditions of the fathers, here publicly renew our oath of allegiance to the Constitution and the laws of the Republic, pledging to the President of the United States our loyal support in any action which, in the exercise of his constitutional powers, he may deem necessary to the protection of American rights upon land and sea. Because the common defense is a common duty, universal military training is the only system that is fundamentally democratic and fair. We urge upon Congress the prompt enactment of a bill to put this system into immediate operation."

This let me say to the middlemen of every sort, whether they are handling our foodstuffs or our raw materials of manufacture or the products of our mills and factories: The eyes of the country will be especially upon you. This is your opportunity for signal service, efficient and disinterested. The country expects you, as it expects all others, to forego unusual profits, to organize and expedite shipments of supplies of every kind, but especially of food, with an eye to the service you are rendering and in the spirit of those who enlist in the ranks, for their people, not for themselves. I shall confidently expect you to deserve and win the confidence of people of every sort and station.

To the men who run the railways of the country, whether they be managers or operative employees, let me say that the railways are the arteries of the nation's life, and that upon them rests the immense responsibility of seeing to it that those arteries suffer no obstruction of any kind, no inefficiency or slackened power.

To the merchant let me suggest the motto, "Small profits and quick service," and to the shipbuilder the thought that the life of the war depends upon him. The food and the war supplies must be carried across the seas, no matter how many ships are sent to the bottom. The places of those that go down must be supplied, and supplied at once.

STATESMEN AND ARMIES HELPLESS WITHOUT MINERS

To the miner let me say that he stands where the farmer does—the work of the world waits on him. If he slackens or fails, armies and statesmen are helpless. He also is enlisted in the great service army.

The manufacturer does not need to be told, I hope, that the nation looks to him to speed and perfect every process; and I want only to remind his employees that their service is absolutely indispensable and is counted on by every man who loves the country and its liberties.

Let me suggest, also, that every one who creates or cultivates a garden helps, and helps greatly, to solve the problem of the feeding of the nations; and that every housewife who practices strict economy puts herself in the ranks of those who serve the nation. This is the time for America to correct her unpardonable fault of wastefulness and extravagance.

Let every man and every woman assume the duty of careful, provident use and expenditure as a public duty, as a dictate of patriotism which no one can now expect ever to be excused or forgiven for ignoring.

THE SUPREME TEST HAS COME

In the hope that this statement of the needs of the nation and of the world in this hour of supreme crisis may stimulate those to whom it comes and remind all who need reminder of the solemn duties of a time such as the world has never seen before, I beg that all editors and publishers everywhere will give as prominent publication and as wide circulation as possible to this appeal.

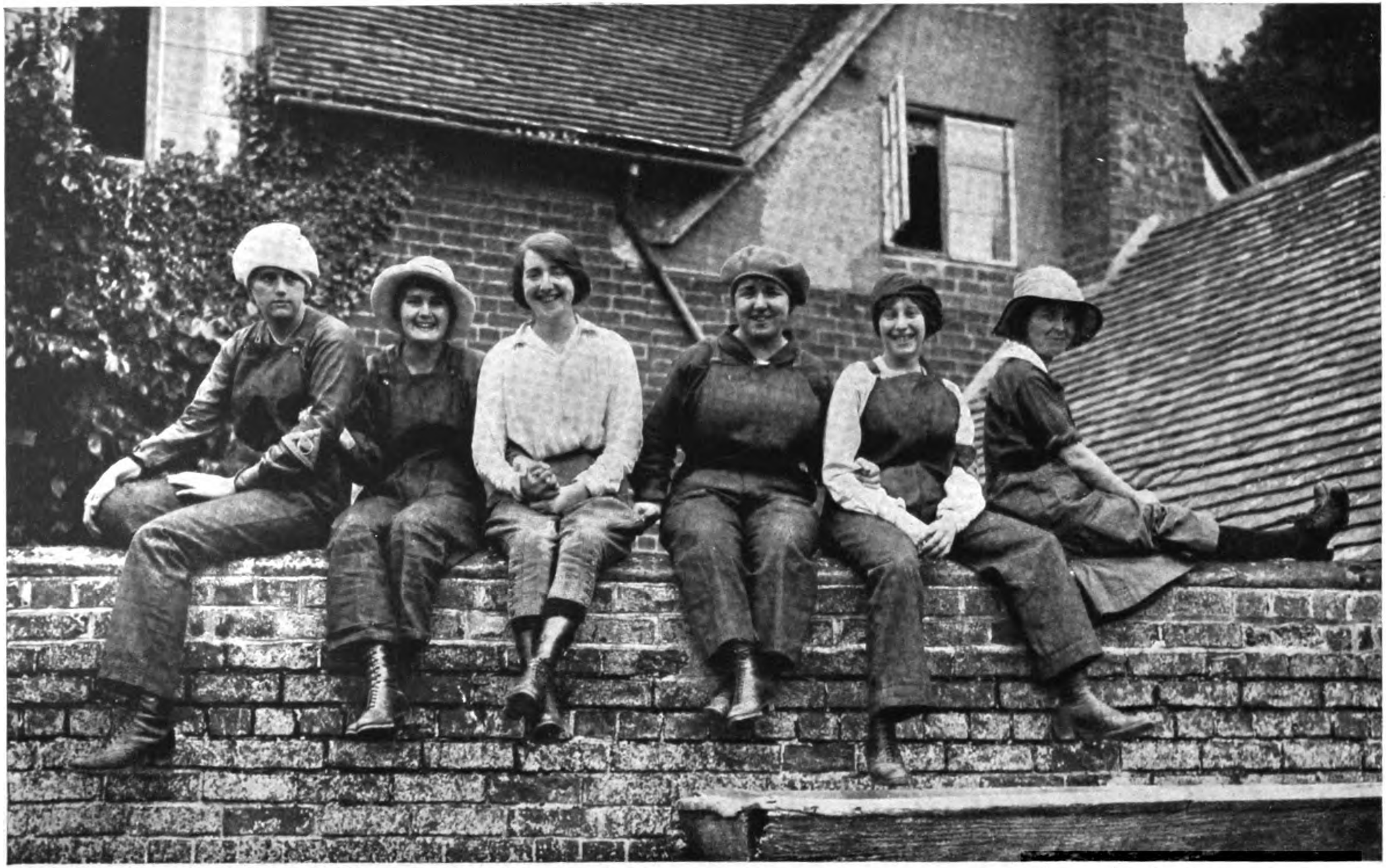
I venture to suggest, also, to all advertising agencies that they would perhaps render a very substantial and timely service to the country if they would give it wide-spread repetition.

And I hope that clergymen will not think the theme of it an unworthy or inappropriate subject of comment and homily from their pulpits.

The supreme test of the nation has come. We must all speak, act, and serve together!

WOODROW WILSON.

THE WHITE HOUSE, *April* 15, 1917.



Photograph by American Press Association

THE WAR BROWNIES RESTING DURING LUNCH TIME: MUNITION WORKERS OF ENGLAND

This sturdy, smiling sextet is a group typical of thousands of human "cogs" in Great Britain's vast machine which is supplying ammunition for the Empire's armies in France, in the Balkans, and in Mesopotamia, and which is also furnishing shells for the Russians and Italians

A TRIBUTE TO AMERICA*

By Herbert Henry Asquith

Formerly Prime Minister of Great Britain

IT IS only right and fitting that this House, the chief representative body of the British Empire, should at the earliest possible opportunity give definite and emphatic expression to the feelings which throughout the length and breadth of the Empire have grown day by day in volume and fervor since the memorable decision of the President and Congress of the United States.

I doubt whether, even now, the world realizes the full significance of the step America has taken. I do not use language of flattery or exaggeration when I say it is one of the most disinterested acts in history. For more than 100 years it has been the cardinal principle of American policy to keep clear of foreign entanglements. A war such as this must necessarily dislocate international commerce and finance, but on the balance it was doing little appreciable harm to the material fortunes and prosperity of the American people.

What, then, has enabled the President—after waiting with the patience which Pitt described as the first virtue of statesmanship — to carry with him a united nation into the hazards and horrors of the greatest war in history?

Not calculation of material gain, not hope of territorial aggrandizement, not even the pricking of one of those so-called points of honor which in days gone by have driven nations, as they used to drive individuals, to the duelling ground.

It was the constraining force of conscience and humanity, growing in strength and compulsive authority month by month, with the gradual unfolding of the real character of German aims and methods. It was that force alone which brought home to the great democracy overseas the momentous truth that they were standing at the parting of the ways. The American nation had to make one of those great decisions which in the lives of men and nations determine for good or ill their whole future.

What was it that our kinsmen in America realized as the issue in this unexampled conflict? The very things which, if we are worthy of our best traditions, we are bound to vindicate—essential conditions of free and honorable development of the nations of the world, humanity, respect for law, consideration for the weak and unprotected, chivalry toward mankind, observance of good faith—these things, which we used to regard as commonplaces of international decency, one after another have been flouted, menaced, trodden under foot, as though they were effete superstitions of a bygone creed.

America sees in this clear issue something of wider import than the vicissitudes of the battlefields, or even of a rearrangement of the map of Europe on the basis of nationality.

The whole future of civilized government and intercourse, in particular the fortunes and faith of democracy, has been brought into peril. In such a situation aloofness is seen to be not only a blunder, but a crime. To stand aside with stopped ears, with folded arms, with averted gaze, when you have the power to intervene, is to become not a mere spectator, but an accomplice.

There was never in the minds of any of us a fear that the moment the issue became apparent and unmistakable the voice of America would not be heard. She has now dedicated herself without hesitation or reserve, heart and soul and strength, to the greatest of causes, to which, stimulated and fortified by her comradeship, we here renew our fealty and devotion.

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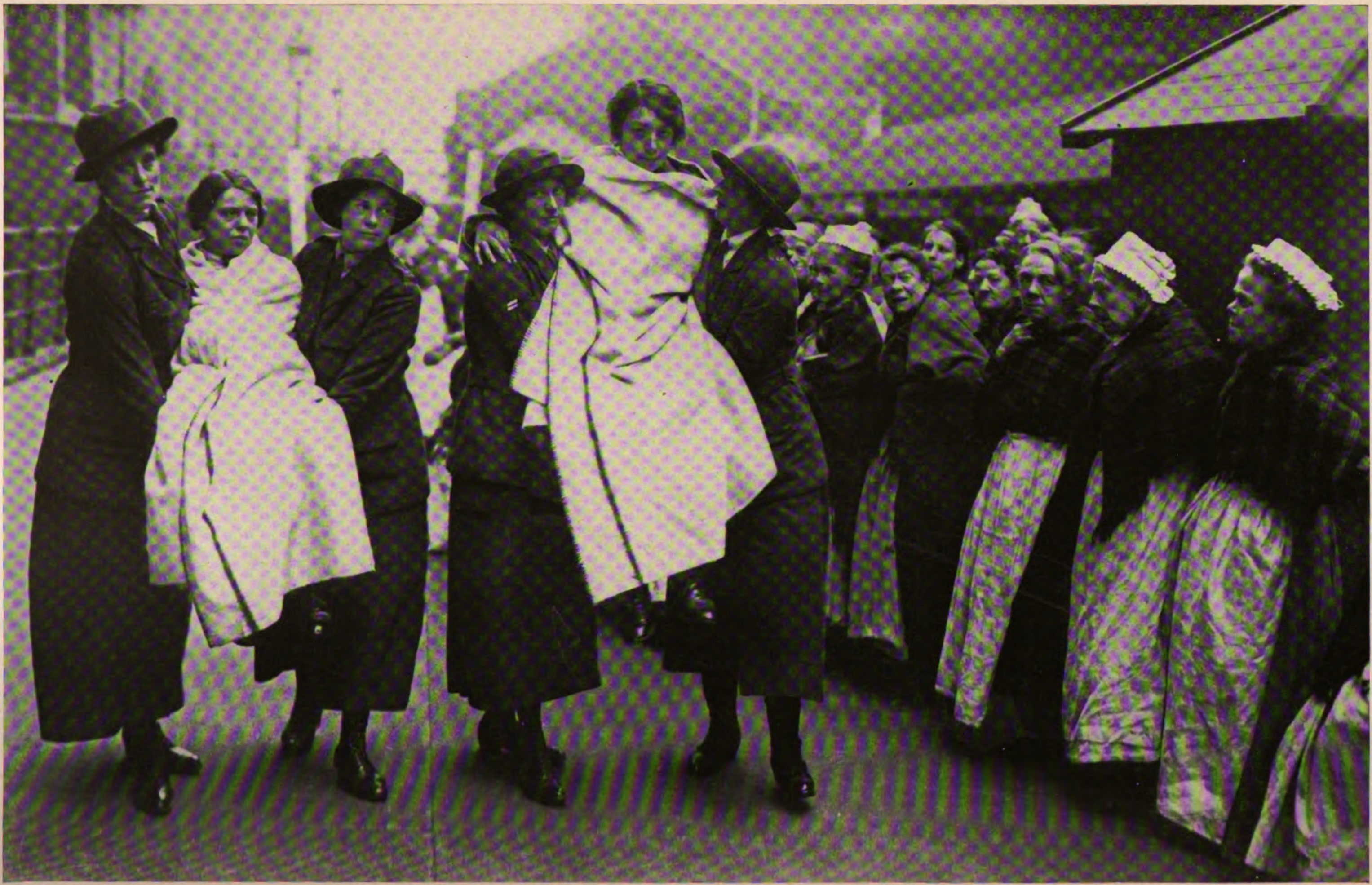
*An address in the House of Parliament April 17, 1917.



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DOING A MAN'S JOB: WOMEN AS WAR-TIME FIRE-FIGHTERS

Some of the aged inmates of an English workhouse watching the women "firemen" at fire drill

FRIENDS OF OUR FORESTS

BY HENRY W. HENSHAW

AUTHOR OF "COMMON BIRDS OF TOWN AND COUNTRY," IN THE NATIONAL GEOGRAPHIC MAGAZINE

Illustrations by Louis Agassiz Fuertes

AT EVERY stage of their growth, from the seed to the adult tree, our forest, shade, and orchard trees are subject to the attacks of hordes of insect enemies, which, if unchecked, would soon utterly destroy them.

What the loss of our forest and shade trees would mean to us can better be imagined than described. Wood enters into so many products that it is difficult to think of civilized man without it, while the fruits of our orchards also are of the greatest importance. Aside from the economic loss, which can hardly be imagined, much less estimated, how barren the world would seem shorn of our forests and beautiful shade trees!

Fortunately, the insect foes of trees are not without their own persistent enemies, and among them are many species of birds whose equipment and habits specially fit them to deal with insects and whose entire lives are spent in pursuit of them. Many insects at one or another stage of their existence burrow deeply into the bark or even into the living wood of trees, and so are quite safe from ordinary bird enemies. Woodpeckers, however, being among the most highly specialized of birds, are wonderfully equipped to dig into wood and to expose and destroy these hidden foes.

Certain insects that largely confine their attacks to the smaller branches and terminal twigs are sought out and preyed upon by nuthatches, creepers, titmice, and warblers. Others, and their number is legion, attack the blossoms and foliage, and here the nimble and sharp-eyed warblers render supreme service, the number of plant lice and lepidopterous larvæ they destroy in a single day almost challenging belief.

Thus our woodland songsters are among the most important of all our birds, and in their own field render man unequaled service. Moreover, very few have any injurious habits, and the little harm they do, if any, weighs as nothing in the balance when compared with the good. By reason of their numbers and their activity in hunting insects, our warblers take first place as preservers of the forest, and the following account, which treats of about half the total number, is devoted to the more conspicuous, the more important, and the commoner species.

THE WARBLER FAMILY

Our wood warblers are assembled in a rather loosely defined family (the Mniotiltidæ), embracing in all about 140 species, of which more than a third are visitors to the United States. They are fairly well distributed over the country at large, although more species make their summer homes in the eastern half of the United States than in the western.

A number of notable species, however, summer in the West, as they do also in the Southern States. Our New World warblers are quite unlike their Old World relatives, the Sylviidæ, or true warblers, whose family includes some 75 genera and between 500 and 600 species.

Not only do our American species differ structurally in many particulars from their Old World representatives, especially in possessing nine instead of ten primaries, but they differ markedly also in appearance and habits. It may be said in passing that while our warblers are brilliantly colored and many of them sexually dissimilar, those of the Old World are not only small, but plainly plumaged; moreover, the sexes are generally alike in coloration.

The larger number of our warblers, as well as the most characteristic, are included in the one genus Dendroica, which is notable, since it includes more species than any other genus of North American birds.

HAUNTS OF WOOD WARBLERS

Fortunately for the bird lover, our wood warblers are not recluses. They are creatures of light and sunshine. Some of them, it is true, retire to the mountain fastnesses or the depths of coniferous forests during the nesting period; but the number of these is small and their withdrawal for only a comparatively short time, while the majority at all times of the year favor the edges of the forest, open woods, or brushy clearings.

Their preference for such situations brings many within the bounds of civilization and renders it comparatively easy for any one so inclined to make their acquaintance. As during migration they assemble in flocks, they are, on the whole, pretty well known; and since, as a rule, they are not shy, they have long been favorite objects of observation and study.

WARBLERS AS SONGSTERS

Despite their name, which would seem to imply musical ability of no mean order, our wood warblers, with few exceptions, occupy no very high place in the musical galaxy. All sing, however, after a fashion, and the musical efforts of some are pleasing, even according to human standards. While most warblers are prodigal enough with their music and sing early and often, especially prior to and during the nesting season, their music is frequently so faint as to be audible only to the trained ear of the bird lover.

As if aware of their musical inferiority, few display much enthusiasm in their vocal efforts, but sing while they work, or while pausing for a brief moment as they move among the foliage hunting for food. With them, singing appears to be an audible expression of general content and well being, and, no doubt, an effort to please and attract their mates.

Certain members of the thrush and thrasher families, on the contrary, which contain in their ranks the prima donnas of our bird world, as if conscious of their supremacy, are wont to mount a commanding perch when about to sing, and to pour out their melody for all the world to hear. With them, singing is not merely incidental to the day's work. It is a conscious and supreme effort, and is much too important to be slighted or shared with any other function. Apparently they appreciate to a great extent and enjoy their own outpourings, and, if we may interpret their feelings by human standards, are conscious that their musical offerings entitle them to an audience.

TROPICAL ORIGIN OF WARBLERS

Not only do their bright colors suggest a tropical origin of our warblers, but their whole make-up is in keeping with tropical surroundings. Warblers are thinly feathered and delicately organized and most of them incapable of withstanding any great degree of cold. They are also almost exclusively insect eaters, only a few of the family being at all vegetarian, and these only to a comparatively small extent.

Hence, with them, migration is not a matter of choice, but is imperative. They come to us on a particular errand for a few short months, and when family cares are at an end, back they hie to the tropics, the lands of warmth and sunshine, which lend them to us for a brief season. Thus the true home of our warblers is not where they nest, but where they spend three-fourths of their lives—not the north, but the south—not in the temperate, but in the tropical zones.

THE SPECTACULAR MIGRATION OF WARBLERS

That wonderful phenomenon, bird migration, is illustrated by few birds so clearly and convincingly as by our wood warblers. Assuredly no other birds—unless it be the geese—migrate in such a spectacular manner. The stroller, in late August or September, finds himself in the woods, the silence being broken only by the drumming of a distant partridge, the chirping of insects, or other familiar sounds which only emphasize the general quiet that prevails.

Presto! The scene changes! The woods, apparently almost tenantless but a moment before, are now filled with life of the most animated and intense kind. Every shrub, every tree, has its feathered occupant. Our observer recognizes perhaps a dozen or twenty species, representing several distinct families; but prominent among them, by reason of numbers, variegated plumage, graceful forms, and active motions, are the wood warblers.

Every individual is alert and busy, gliding from one twig to another near by, or flying from one tree to the next, while from all sides come the soft calls and notes of individual members of the flock, whose friendly converse has the effect, if not the purpose, of keeping the individuals of the assemblage in touch with each other and with the flock as a unit. In a few moments silence again reigns where all was commotion and activity. The birds have passed on their seemingly aimless course.

If the observer would learn the solution of the mystery of the birds' evident hurry, he has only to follow them for a time, when he will find that, however erratic may seem the course of individual members of the flock, the flock as a whole is steering a tolerably straight course southward. In other words, he is in the midst of a flock of birds en route to their winter quarters and, in order to economize time, feeding as they go. This, however, is not the only way warblers migrate, nor is it the most important, since the greater part of the long journey of many is performed by night.

Any one with good ears has only to listen on a clear, frosty night in fall to hear hundreds of warblers and other birds as they flit by, a few hundred yards above the earth, the call notes coming incessantly out of the darkness. The route of these flying hosts often carries them above cities, and one cannot be insensible to the incongruity between his surroundings and the woodland scenes, so vividly brought to mind by the lisping notes coming from the darkness overhead. The subject of migration has not inspired our poets so often as might be expected, but Longfellow, in his "Birds of Passage," gives us the following wonderfully suggestive lines:

But the night is fair,
And everywhere
A warm, soft vapor fills the air,
  And distant sounds seem near;
And above, in the light
Of the star-lit night,
Swift birds of passage wing their flight,
  Through the dewy atmosphere.

I hear the beat
Of their pinions fleet,
As from the land of snow and sleet
  They seek a southern lea.
I hear the cry
Of their voices high,
Falling dreamily through the sky,
  But their forms I cannot see.

Probably because insects constitute such an important part of their food, warblers, as a rule, migrate early in fall and late in spring. It is true that in fall many linger till frosts nip the vegetation; but insects are abroad even later than this, and it is only necessary to watch these late migrants for a short time to learn that their search for insects is being well rewarded.

Only a few species come north early in spring, the great bulk of the warblers evidently having been taught by bitter experience that in spring, at least, it is not the early bird that finds most worms or finds them easiest.

FLOCKING OF SMALL BIRDS

Just why small birds, when migrating, congregate in large flocks and troop through the woodlands has often been the subject of speculation. Juncos, several species of sparrows, woodpeckers, nuthatches, chickadees, creepers, and, above all, warblers, combine to swell the ranks of these migrating companies. As many as a dozen or more species of warblers may often be seen in one flock, which, in addition, may include 200 or 300 individuals, representing a number of families whose tastes and habits in every-day life differ very widely.

Yet here are these incongruous elements mingling together on terms of the utmost friendliness. Since birds are sociable beings, except during the short time when family cares prompt to jealous vigilance, sociability alone may be the bond of union; added, however, to the kindly feeling of companionship probably is a feeling of increased security which comes from numbers. Certainly no enemy can approach one of these bird assemblages without being spied by at least one pair of vigilant eyes, when the flock is immediately notified by a few sharp chirps—warning for every individual to seek safety in flight or to scurry to cover.

WHAT MYSTERIOUS SENSE GUIDES THEM IN THEIR LONG JOURNEYS?

In what manner warblers migrate—that is, how they are guided on their long journeys—is a moot question. Little mystery attaches to their ability to find their way north or south in daylight, since the recognizable landmarks are many and prominent. As most birds, especially the warblers, choose starlight and moonlight nights for their trips, perhaps they are similarly guided by night, and natural landmarks, as mountains, rivers, and the coastline may point out much, if not all, of their way.

However plausible this explanation may sound in the case of birds migrating over land, it utterly fails when applied to migrants whose journeys north and south necessitate flight over long stretches of ocean, in some instances at least 2,000 miles, quite out of sight of land and of all landmarks.

In seeking an explanation of the mystery of birds' ability to find their way under such circumstances, many are inclined to reject the one-time sufficient answer, "instinct," in favor of the more recent theory, the possession by birds of another faculty, the so-called "sense of direction." This added sense enables birds to return to a known locality with no other aid than an ever-present knowledge of the right direction.

But, in the case of our wood warblers, there is little need of appealing to another sense to guide them in migration, or, indeed, to anything out of the ordinary save excellent memory and good eyesight. The five-hundred-mile flight toward the tropics across the Gulf of Mexico is made by preference, and however it originated as a fly line, had it proved to be extra hazardous, it might have been abandoned at any time in favor of the apparently safer West Indian route.

But, after all, the Gulf trip involves few hazards other than those connected with storms, since the flight across the water, even at a slow rate, would necessitate a journey of less than 24 hours, and this, no doubt, is quite within the capacity of even the smallest and weakest of the family. Moreover, the South American Continent is too big a mark to be easily missed, and an error of a few hundred miles north or south would make little difference in the safety of the birds.

WHY WARBLERS MIGRATE

It may be set down as an axiom that all birds which travel south in fall do so because they must migrate or freeze or starve. Why some of them leave early, when food in their summer home is seemingly so abundant, is indeed a puzzle. Once the nestlings are on the wing and ready for the journey, off they go, old and young.

Nevertheless, by an apparently premature start they only anticipate by a few weeks the time of scarcity when they must go, and perhaps the lesson of bitter experience in the history of the several species has taught them to go when all the conditions are favorable. It is true that every winter a few birds, often a few individuals of a given species, winter far north of the customary winter home. Some of these are evidently stragglers or wanderers which, for some unexplained reason, failed to accompany the rest of their kind on the southward migration. They in no wise affect the general statement, being exceptional in every way.

A few of our warblers in Florida and on other parts of our southern coast do not migrate; but the almost universal rule in the family is to abandon the summer home when the care of the young ceases and to go far southward ere they stop for the winter. Indeed, the males of many species do not trouble themselves much with the care of the nestlings, but prepare to migrate before the young are well on the wing.

A still more flagrant case is that of the hummingbirds. The male deserts the female when she is still on her eggs, shifting the responsibility of caring for the family entirely on her devoted head, while he disports himself among the flowers, leaving for the south long before his exemplary mate and the young are ready.

Some of our species, however, while migrating southward, are satisfied to remain all winter within our boundaries. Thus the pine and palm warblers winter in the Gulf States, while a greater or less number of individuals, representing several species, winter in southern Florida. The great majority, however, winter south of the United States, in Central and South America.

Thus Professor Cooke tells us: "The prairie, black-throated blue, Swainson's, Bachman's, Cape May, and Kirtland's warblers go only to the West Indies. The worm-eating, myrtle, magnolia, chestnut-sided, black-throated green, hooded, blue-winged, Nashville, orange-crowned, parula, palm, and Wilson's warblers, and the chat, go no farther than Central America, while many species spend the winter in South America, including some or all the individuals of the black and white, prothonotary, golden-winged, Tennessee, yellow, cerulean, bay-breasted, black-poll, Blackburnian, Kentucky, Connecticut, mourning, and Canada warblers, the redstart, oven-bird, and both the water-thrushes. Nearly all the warblers of the western United States spend the winter in Mexico and the contiguous portions of Central America."

VAST NUMBERS SUCCUMB

The northward journey in spring, away from the land of sunshine and plenty to the land of uncertain spring weather, is another matter. Probably if all birds that habitually abandon the north and winter in the south were to nest there, their quota, added to the number resident in the tropics, would be too great for the means of subsistence.

Nevertheless, birds are not forced away from their winter quarters by inclement weather or impending famine, but by the subtle physiological change which warns them of the approach of the mating season and fills them with new desires, among which is the compelling one of a return to the spot where they first saw the light, or where they reared last season's brood.

Whatever the cause, the birds are not discouraged by the many and great perils that attend migration, and vast numbers every year succumb to them. Storms, especially off-shore storms, constitute the gravest peril, and there is abundant evidence that millions of birds are annually blown out to sea to find watery graves. Perhaps no family suffers more in the aggregate than the warblers. Thinly feathered, delicately organized, highly insectivorous, they are exposed to unusual dangers while birds of passage to and from their nesting grounds.

It is a matter of common observation that every few years in some given locality, perhaps embracing a region of considerable size, a particular species of warbler or other bird suddenly becomes rare where before common. After a season or so, though sometimes not for years, the equilibrium is reëstablished and the numbers are as before. These changes very probably are the visible signs of migration catastrophes, the result of the sweeping away of a migration wave, composed of one or of many species, in the path of some sudden storm.

Again, many of us have witnessed the dire effects of a prolonged rain and sleet storm in spring, when thousands of luckless migrants find only too late that they have prematurely left the warmth and plenty of their tropical winter refuges. Under such circumstances thousands of migrants perish from the combined effects of cold and starvation, and among them are sure to be great numbers of warblers.

ECONOMIC VALUE OF WARBLERS

From the esthetic point of view, our warblers, as a group, occupy a high and unique position. They also occupy no uncertain place in the list of our useful birds. Preëminently insectivorous, they spend their lives in the active pursuit of insects. They begin with the eggs, preying upon them whenever and wherever found, and continue the good work when the egg becomes the larva and when the larva becomes the perfect insect.

They are especially valuable in this respect because of the protection they lend to forest trees, the trunk, bark, and foliage of which they search with tireless energy. Their efficiency is vastly increased because the many different species pursue the quest for food in very different ways. While some confine their search chiefly to the trunks and large branches and examine each crack and crevice in the bark for eggs or larvæ, others devote their energies to the twigs and foliage, scanning each leaf and stem with eager eyes. Still others descend to the ground and examine the rubbish and grass for hidden prey, while nearly all are adept at catching insects on the wing.

Each species, however, has a method of its own, more or less unlike that of its fellows, and each excels in some specialty. Not only does the group as a whole specialize on insects, but each individual member of the group still further specializes, so as to leave no loophole for the escape of the enemy.

The quantity of animal food required to drive the avian engine at full speed is so very great that it is no exaggeration to say that practically all the waking hours of our warblers, from daylight to dark, are devoted to food-getting. What this never-ceasing industry means when translated into tons-weight of insects, it is impossible even to guess, but the practical result of the work of our warblers and other insectivorous birds is that we still have our forests, and shall continue to have them so long as we encourage and protect the birds.

In the case of orchards and shade trees, there are other means at our disposal of controlling the insect enemy, notably the use of sprays. Sprays are very important, since birds are too few in number immediately to control insect outbreaks, especially nowadays, when the number of destructive native insects has been so greatly increased by importations from all quarters of the globe. But for the preservation of our forests we must rely largely upon our birds, since the use of sprays or of other agencies over our vast woodland tracts would be too expensive, even were it not quite impracticable for many other reasons.

MEANS OF INCREASING THE NUMBER OF WARBLERS

Insects are very numerous, and there is reason to believe that much benefit would result if we could multiply the present number of their enemies—the birds. The erection of bird boxes and shelters is an easy way to increase the number of certain species of birds, like swallows and chickadees. Unfortunately, with few exceptions, our warblers do not build their nests in cavities, and hence can not be induced to occupy bird boxes.

Many of them, however, nest in bushes, vines, and shrubbery, and by planting clumps of these near houses something can be done toward increasing the numbers of certain species, as the yellow warbler and the redstart. Because our warblers are chiefly insectivorous, their food habits bar them from the usual bird lunch-counter in times of hard storms.

During migration, warblers are peculiarly exposed to the danger of prowling cats. Many species feed close to or even on the ground, and then they are so much concerned with their own business that any tabby, however old and lazy, is equal to catching one or more individuals daily. The bird lover can do good service by summarily disposing of vagrant cats, which, during migration, work havoc in the ranks of our small birds.

They can also restrain the pernicious activities of their own pets, for these, however well fed, are still subject to the predatory instincts of their wild ancestry, which impel them to stalk a live bird with all the zeal and cunning of their forebears.

PLUMAGES OF WARBLERS

Little difficulty is experienced, even by the tyro, in distinguishing warblers from other birds, but to recognize the several species is not so easy, particularly as the adult males and females of many species are markedly dissimilar, while the young, both in the first and second plumages, often differ from the adults. So far as possible the various plumages are shown in the illustrations of the artist, which are so admirable as to do away with the need of descriptive text. All are approximately one-half life size.

THE WARBLERS OF NORTH AMERICA

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YOUNG FISH-HAWKS ABOUT TO LEAVE THEIR NEST: GARDINER'S ISLAND, NEW YORK

Photograph by Frank M. Chapman, and from his book, "Camps and Cruises of an Ornithologist"

MARYLAND YELLOW-THROAT (Geothlypis trichas and variety)

Length, about 5⅓ inches. Mostly green above, yellow below. Distinguished from other warblers by broad black band across forehead, bordered narrowly with white.

Range: Breeds from southern Canada to southern California, Texas, and Florida; winters from the southern United States to Costa Rica.

This little warbler is common throughout the Eastern and Southern States, frequenting thickets and low bushes on swampy ground. He is not a tree lover, but spends most of his time on or very near the ground, where he hunts assiduously for caterpillars, beetles, and various other small insects. Among the pests that he devours are the western cucumber beetle and the black olive scale. He has a cheery song of which he is not a bit ashamed, and when one happens to be near the particular thicket a pair of yellow-throats have chosen for their own, one has not long to wait for vocal proof that the male, at least, is at home. The yellow-throat has the bump of curiosity well developed, and if you desire a close acquaintance with a pair you have only to "squeak" a few times, when you will have the pleasure of seeing at least one of the couple venture out from the retreat far enough to make sure of the character of the visitor.

YELLOW-BREASTED CHAT (Icteria virens and subspecies)

Length, about 7½ inches. Its size, olive-green upper parts, and bright yellow throat, breast, and upper belly distinguish this bird at a glance.

Range: Breeds from British Columbia, Montana, Wisconsin, Ontario, and southern New England south to the Gulf States and Mexico; winters from Mexico to Costa Rica.

The chat is one of our largest and most notable warblers. It is a frequenter of brushy thickets and swampy new growth, and, while not averse to showing itself, relies more upon its voice to announce its presence than upon its green and yellow plumage. Not infrequently the chat sings during the night. The song, for song we must call it, is an odd jumble of chucks and whistles, which is likely to bring to mind the quip current in the West, "Don't shoot the musician; he is doing his best." In this same charitable spirit we must accept the song of the chat at the bird's own valuation, which, we may be sure, is not low. Its nest is a rather bulky structure of grasses, leaves, and strips of bark, and is often so conspicuously placed in a low bush as to cause one to wonder how it ever escapes the notice of marauders fond of birds' eggs and nestlings.

The chat does no harm to agricultural interests, but, on the contrary, like most of the warbler family, lives largely on insects, and among them are many weevils, including the alfalfa weevil and the boll weevil so destructive to cotton.

(See Biol. Surv. Bull. 17, p. 18 *et seq.;* also Circular 64, p. 5.)

OVEN-BIRD (Seiurus aurocapillus)

Length, a little over 6 inches. Above mostly olive green; below white, breast and sides streaked with black.

Range: Breeds from southern Mackenzie, Ontario, southern Labrador, and Newfoundland south to Wyoming, Kansas, southern Missouri, Ohio Valley, and Virginia; also in mountains of Georgia and South Carolina; winters in southern Florida, southern Louisiana, Bahamas, West Indies, and southern Mexico to Colombia.

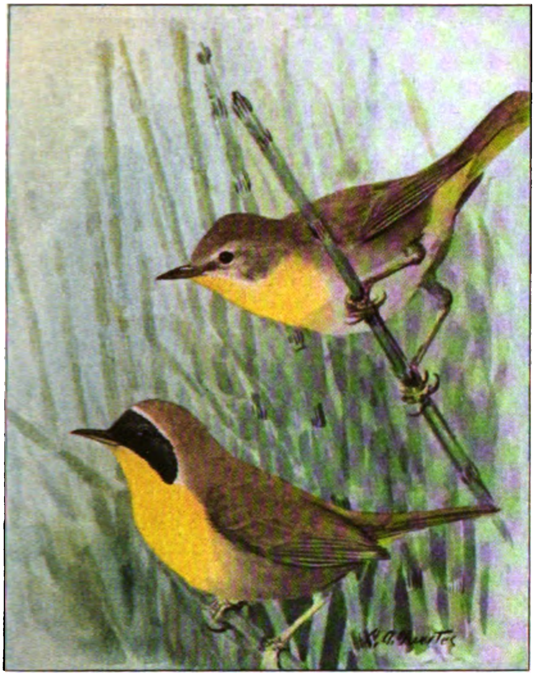
The oven-bird is one of our best-known birds and one the woodland stroller is sure to get acquainted with, whether he will or no, so common is it and so generally distributed. In moments of ecstacy it has a flight song which has been highly extolled, but this is only for the initiated; its insistent repetition of "teacher, teacher, teacher," as Burroughs happily phrases it, is all the bird vouchsafes for the ears of ordinary mortals. Its curious domed-over grass nest is placed on the ground and is not hard to find. The food of the oven-bird does not differ greatly from that of other warblers, notwithstanding the fact that the bird is strictly terrestrial in habits. It consists almost exclusively of insects, including ants, beetles, moths, span worms, and other caterpillars, with a few spiders, millepods, and weevils.

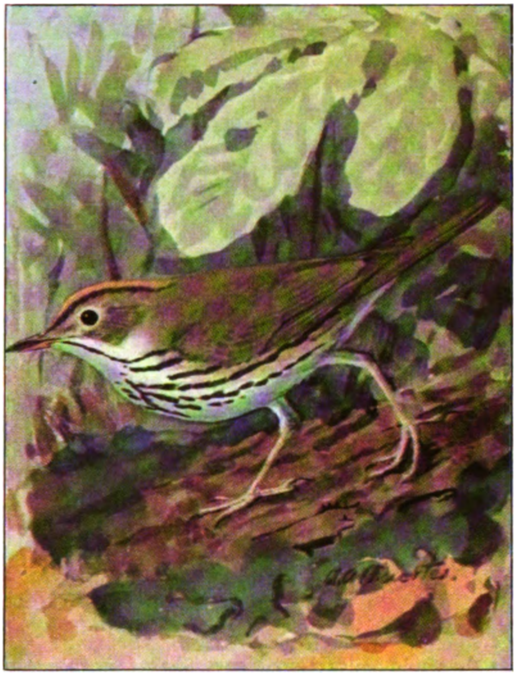
(See Biol. Surv. Bull. 17; also yearbook for 1900, p. 416.)

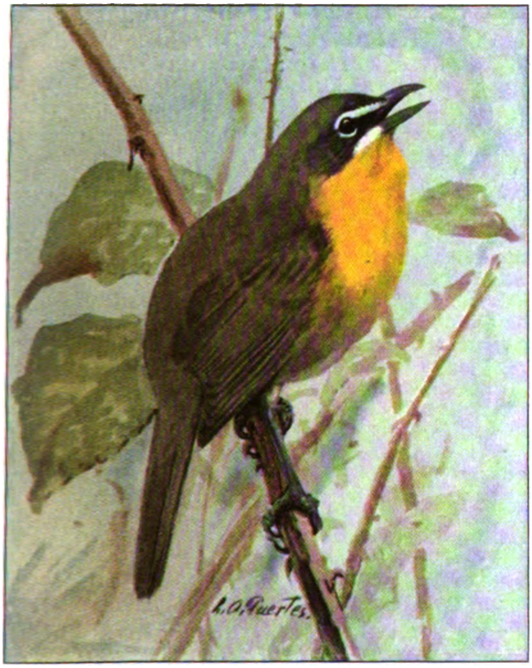
RED-FACED WARBLER (Cardellina rubrifrons)

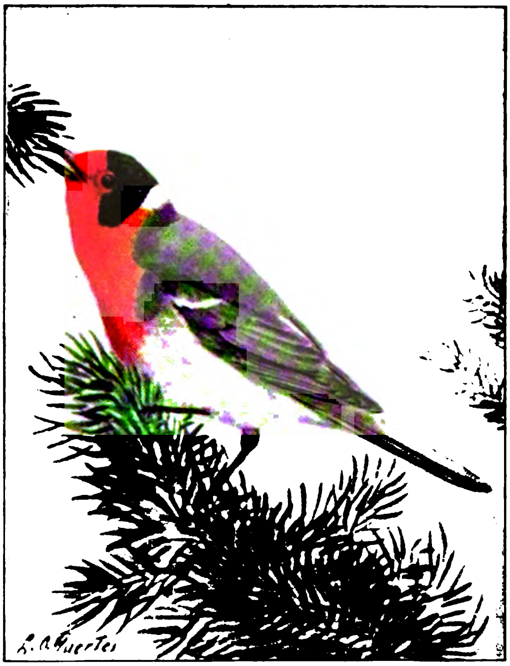
Range: Mainly in Transition Zone in mountains of southern Arizona and southwestern New Mexico and south through Mexico to the highlands of Guatemala.

So differently colored from our own North American warblers generally is the little red-face that one might at once suspect it to be a stranger from a strange land. So at least it seemed to me when, in the mountains near Apache, Arizona, in July, 1874, I saw the first one ever detected within our borders. Later in the same year I found others on Mount Graham. It is a Mexican species which has obtained a foothold along our southern borders in Arizona and New Mexico. As I noted at the time, I saw flocks of ten or fifteen among the pines and spruces, the birds frequenting these trees almost exclusively, only rarely being seen on the bushes that fringed the stream. In habits red-faced warblers are a rather strange compound, now resembling the common warblers, again recalling the redstart, but more often, perhaps, bringing to mind the less graceful motions of the familiar titmice. Their favorite hunting places appear to be the extremities of the limbs of spruces, over the branches of which they quickly pass, with a peculiar and constant sidewise jerk of the tail. Since 1874 other observers have had a better chance to study the bird and a number of nests have been taken. These were under tufts of grass, and in the case of one found by Price was "such a poor attempt at nest-building and made of such loose material that it crumbled to fragments on being removed."









MARYLAND YELLOW-THROAT
Female and Male

OVEN-BIRD

YELLOW-BREASTED CHAT

RED-FACED WARBLER

WORM-EATING WARBLER
(Helmitheros vermivorus)

Range: Breeds mainly in the Carolinian Zone from southern Iowa, northern Illinois, eastern and western Pennsylvania, and the Hudson and Connecticut River valleys south to southern Missouri, Tennessee, Virginia, and mountains of South Carolina; winters from Chiapas to Panama, in Cuba and the Bahamas.

He who would make the acquaintance of the worm-eating warbler must seek it in its own chosen home, far from which it never strays. It is a bird of shaded hillside and dark thickets along watercourses. Though nimble in its movements and an active insect hunter, it is an unobtrusive little warbler, garbed in very modest colors, and is likely wholly to escape the notice of the unobservant.

There seems to be an unusual degree of jealousy among the males, and a pair, the hunting and the hunted, are often seen pursuing a rapid, zigzag flight through trees and bushes. I imagine that in such cases the pursuing male, whose angry notes show how much in earnest he is, is asserting the right of domain over his own hunting grounds, and driving from his preserves an intruder.

Like several of our terrestrial warblers, the worm-eater has caught the trick of walking, perhaps borrowing it from his thrush neighbors, and he rarely or never hops. In his case the term "terrestrial" must be modified by the statement that to a certain extent he is a connecting link between the arboreal members of the family, as the black-throated green and Tennessee, which descend to the ground only casually, and such species as the Connecticut and the Swainson, which seek their food chiefly on the ground. Of the musical ability of the worm-eating warbler little is to be said save that his song is so very feeble that one must listen carefully to hear it at all, and that it much resembles that of our familiar "chippy" when heard a long distance off. This warbler nests on the ground, often on a hillside or in a shallow depression, and the pairs seem so much attached to their old home that they may confidently be looked for in the same place year after year.

GOLDEN-WINGED WARBLER
(Vermivora chrysoptera)

Range: Breeds in Alleghanian Zone from central Minnesota, southern Ontario, and Massachusetts south to southern Iowa, northern Illinois, northern Indiana, northern New Jersey, and northern Georgia; winters from Guatemala to Colombia.

Though less gaudily colored than certain others of our warblers, the golden-wing ranks high in the family for beauty, and its trim form and tastefully contrasted tints of gray, black, and yellow may well excite admiration. It is almost wholly limited to eastern States, rarely indeed being found west of the Mississippi, and its summer haunts are in the northern parts of its range. Though common in some localities, the golden-wing in most places is sufficiently rare always to interest the bird observer, and in Massachusetts if several are heard or seen in a long tramp the day may well be esteemed a red-letter day. The bird is to be looked for in deciduous timber, and is especially fond of elms and birches as hunting grounds. I have often seen it busy in elms so high up that only with difficulty could it be distinguished from the Tennessee, Nashville, and other strikingly different warblers in company with it. Like the blue-wing, it has the habit of clinging to the tip of a branch or cluster of flowers, back downward, examining the spot with the most exact scrutiny.

Once heard, its song is not to be forgotten nor mistaken for that of any other warbler, unless possibly the blue-wing. It possesses a buzzing, insectlike quality and is well represented to my ears by the syllables *ze-ze-ze-ze*, the latter notes in a higher pitch. It seems strange that a bird so distinctly arboreal in habits should choose to nest on the ground; but numerous nests of the golden-wing have been found, all of them practically on or a few inches from the earth, though usually supported by weed stalks or grass stems.

ORANGE-CROWNED WARBLER
(Vermivora celata celata)

Range: Breeds in lower Hudsonian and Canadian Zones from Kobuk River, Alaska, southeast to central Keewatin and Manitoba, and south locally in the Rocky Mountains to New Mexico; winters in the Gulf and South Atlantic States to South Carolina and south through Mexico to Mount Orizaba.

The orange-crowned warbler is much better known as a migrant, especially a fall migrant, than as a summer resident. Its summer home, in fact, is so far north that it is beyond the ken of most observers, although the bird occasionally summers, and no doubt nests, in Maine and Wisconsin. Seton found it a common summer resident in Manitoba; Kennicott discovered it nesting about the Great Slave Lake among clumps of low bushes; while Nelson found it common in summer in the wooded regions of northern Alaska. For some reason or other of late years the orange-crown seems to be a much commoner migrant in Massachusetts, and perhaps generally in New England, than formerly, and the sight of three or four in a day occasions no great surprise. It winters in Florida and in other of the South Atlantic States, and the cause of its rarity in the Eastern States in spring is due to the fact that it migrates up the Mississippi Valley. The orange-crown is one of the most plainly colored of the warbler tribe, and there is little about it to attract the notice of the casual observer. The song is said to consist of a few sweet trills, and, as is the case with the ditties of so many of its kind, has been likened to that of the familiar little "chippy."

BLUE-WINGED WARBLER (Vermivora pinus)

(For text, see page 311)

BLACK AND WHITE WARBLER (Mniotilta varia)

Length, about 4¼ inches. Easily known by its streaked black and white plumage.

Range: Eastern North America. Breeds from central Mackenzie, southern Keewatin, northern Ontario, Newfoundland, Nova Scotia, and New Brunswick to eastern Texas, Louisiana, central Alabama, and northern Georgia, west to South Dakota; winters in Florida and from Colima and Nuevo Leon to Colombia, Ecuador, and Venezuela.

A warbler in form and general make-up, a creeper by profession and practice, this readily identified species, in its striped suit of black and white, may be observed in any bit of eastern woodland. Here it flits from tree to tree or climbs over the trunks and branches, scanning every crack and cranny for the insects that constitute its chief food. Though not a lover of open country, it frequently visits the orchard, where it performs its part in the task of keeping insect life within due bounds. It nests on the ground and hides its domicile so skillfully that it is not often found. None of the warblers are noted as songsters, but the black and white creeper, as I like best to call it, emits a series of thin wiry notes which we may call a song by courtesy only. In scrambling over the trunks of trees it finds and devours many long-horned beetles, the parents of the destructive root-borers; it also finds weevils, ants, and spiders.

YELLOW WARBLER (Dendroica æstiva and races)

Length, little more than 5 inches. Mostly yellow, breast and belly streaked with reddish brown.

Range: North America, breeding generally throughout its range south to California, New Mexico, Missouri, and northern South Carolina; winters in Central and South America.

The "yellow bird," or wild canary, as it is sometimes called, is one of the commonest of the warbler tribe and ranges over a vast extent of territory, being found here and there from ocean to ocean. Unlike some of its relatives, it prefers open thickets, especially of willows, to thick woodland, and often builds its pretty nest by the roadside or in garden shrubbery. Though not an expert musician, the yellow warbler sings early and often, and in zeal makes up what it lacks in quality of voice. Because its nest is easily found by the initiated, this warbler is often victimized by the infamous cowbird, and is forced to bring up one, or even two, young cowbirds in place of its own rightful progeny. It is pleasant to be able to record the fact that sometimes the clever warbler knows enough—how it knows it is another matter—to evade the unwelcome responsibilities thus thrust upon it, and builds a platform over the alien egg, and then continues its domestic affairs as originally planned. Indeed, cases are on record when two cowbirds' eggs have been found in a nest, each covered up by a separate layer of nest material.

(See Biol. Surv. Bull. 17, p. 20 *et seq.*; also Bull. 29.)

AUDUBON'S WARBLER (Dendroica auduboni)

Length, about 5 inches. Much like the yellow-rump, but with yellow crown and throat patch.

Range: Breeds from central British Columbia, Alberta, and southwestern Saskatchewan to our southern border, east to South Dakota and Nebraska; winters from California and Texas south to Guatemala.

No member of the wood warbler family is more characteristic of the group than this beautiful bird. In voice, coloration, and habits it is almost the counterpart of the yellow-rump of the Eastern States, for which indeed it might easily be mistaken were it not for its yellow throat, the corresponding area in the yellow-rump being white. It summers in the mountains and shows off to advantage against the dark foliage of the pines. It seems to have little fear of man and in winter frequents orchards, gardens, and dooryards. Wherever it may be, it keeps up an incessant hunt for its insect food, in the pursuit of which, like many others of its family, it sometimes essays the rôle of flycatcher, being very expert and nimble on the wing. This warbler also devours large numbers of ants, flies, scale and plant lice, and noxious bugs.

(See Biol. Surv. Bull. 30, pp. 43-46.)

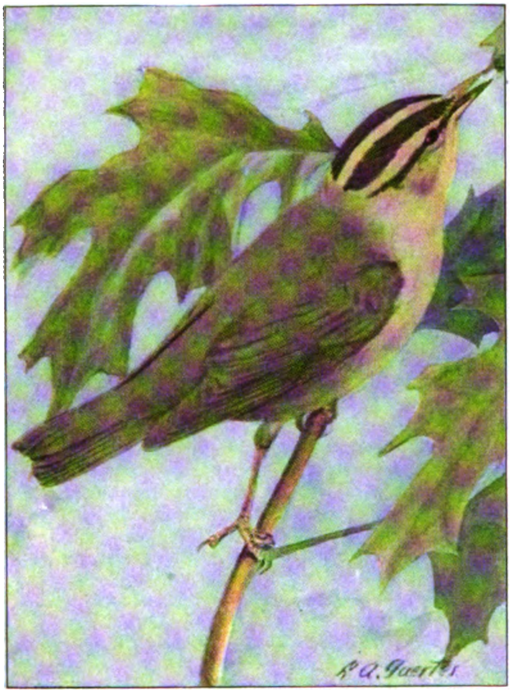
REDSTART (Setophaga ruticilla)

Length, nearly 5½ inches. To be distinguished from other warblers by its coloration and its motions. (See below.)

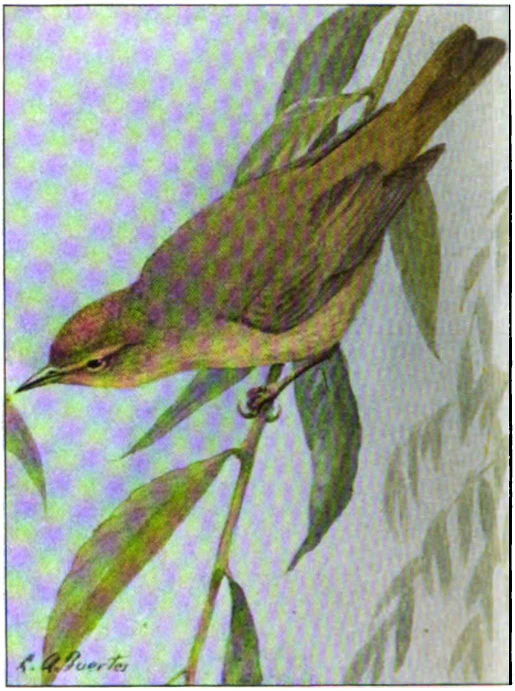
Range: Breeds from central British Columbia and eastern Canada to Washington, Utah, Colorado, Oklahoma, and North Carolina; winters in the West Indies and from Mexico to Ecuador.

Its beauty of form and plumage and its graceful motions place this dainty bird at the head of our list of wood warblers—a place of distinction indeed. The bird appears to be the incarnation of animated motion and fairly dances its way through the forest. Spanish imagination has coined a suggestive and fitting name for the redstart, *candelita,* the little "torch-bearer." The full appropriateness of the name appears as the graceful creature flits through the greenery, displaying the salmon-colored body and the bright wing and tail patches. The redstart is not unknown in some parts of the West, but it is essentially a bird of the Eastern States, where it is a common inhabitant of open woodland districts. While it builds a rather neat and compact structure of strips of bark, plant fibers, and the like, placing it in a sapling not far from the ground, the nest is not the thing of beauty one might be led to expect from such a fairy-like creature. Ornamental as the redstart is, it possesses other claims on our gratitude, for it is a most active and untiring hunter of insects, such as spittle insects, tree-hoppers, and leaf-hoppers, and both orchard and forest trees are benefited by the unceasing warfare it wages.

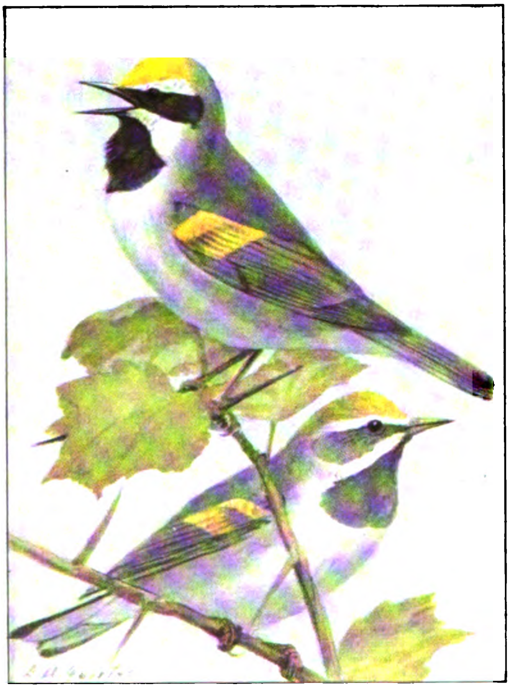
(See Biol. Surv. Bull. 17, p. 20 *et seq.*)



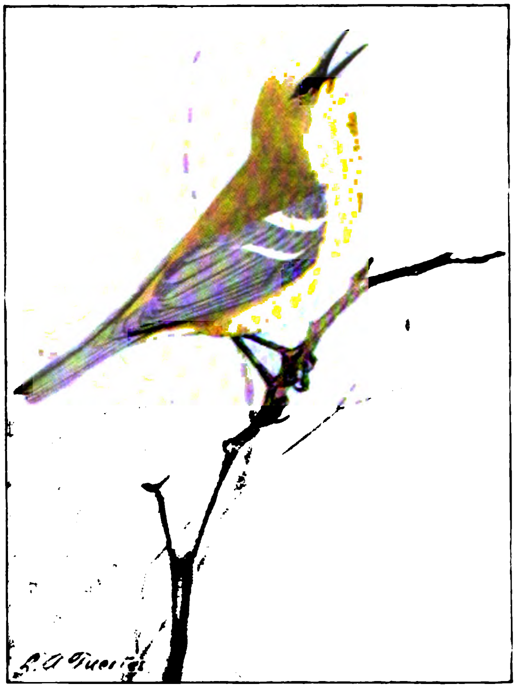
WORM-EATING WARBLER



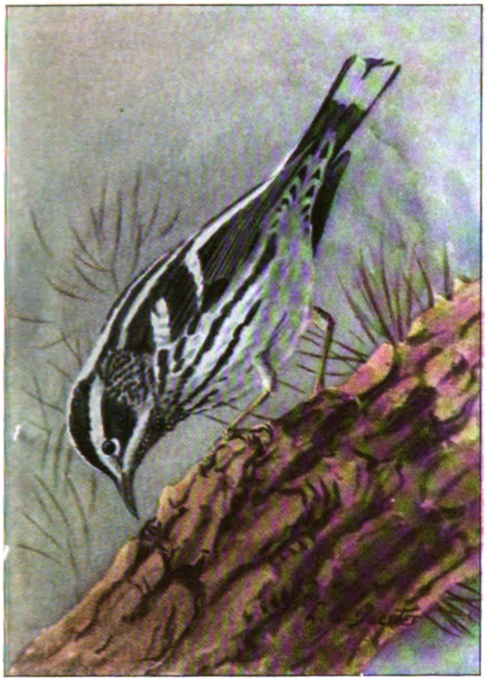
ORANGE-CROWNED WARBLER

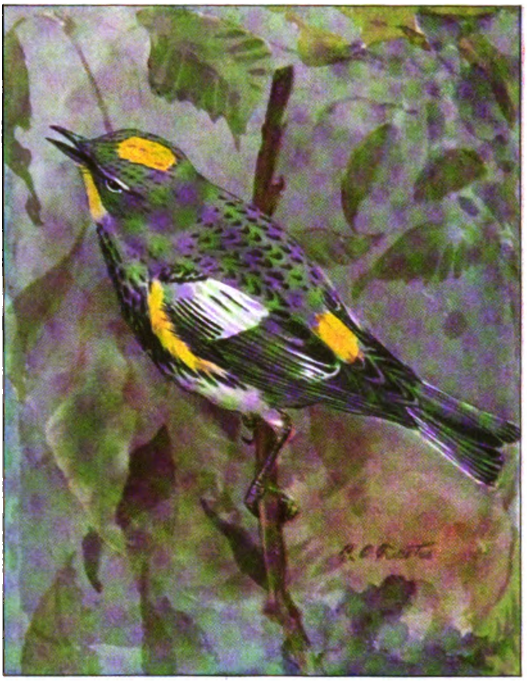


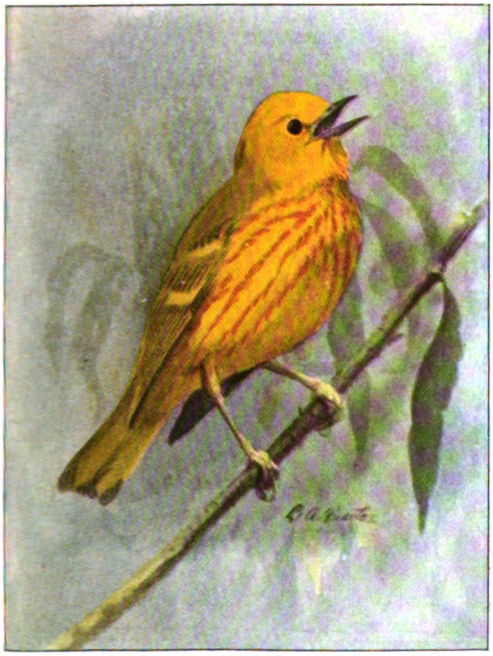
GOLDEN-WINGED WARBLER
Male and Female

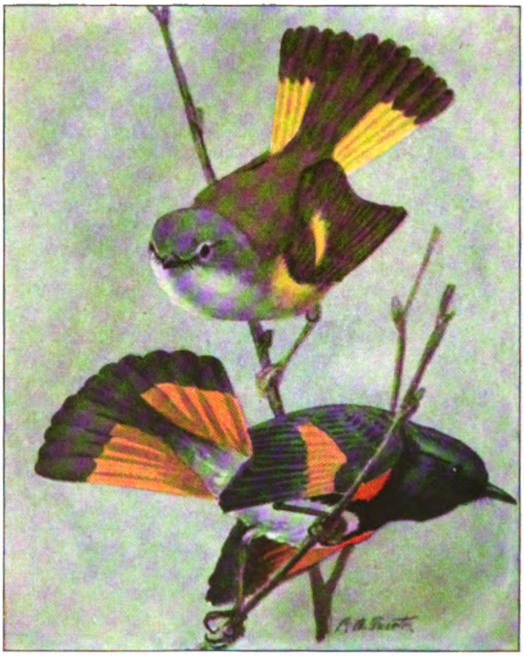


BLUE-WINGED WARBLER









BLACK AND WHITE WARBLER

AUDUBON WARBLER

YELLOW WARBLER

REDSTART
Female and Male

TENNESSEE WARBLER (Vermivora peregrina)

Range: Breeds in Canadian Zone from upper Yukon Valley, southern Mackenzie, central Keewatin, southern Ungava, and Anticosti Island south to southern British Columbia, southern Alberta, Manitoba, northern Minnesota, Ontario, New York (Adirondacks), northern Maine, and New Hampshire; winters from Oaxaca to Colombia and Venezuela.

The Tennessee warbler is by no means as local as its name would imply, but is likely to be found in migration almost anywhere in eastern United States, although it is much more numerous in the Mississippi Valley. Unpretentious both in dress and character, this little bird seems to possess no very salient characteristics. It is, however, not likely to be mistaken for any other species save the Nashville, which it resembles rather closely. During spring migration the Tennessee is apt to be overlooked, since it is prone to keep in the tree-tops. In fall, however, it is found lower down, usually in company with flocks of other warblers, among which it becomes conspicuous by reason of its very inconspicuousness and in contrast with its more gaudy fellows.

Its song has been variously described and may be said to be a simple trill not unlike the chippy. It appears to be certain that the Tennessee, like the Nashville, nests on the ground, but apparently the nesting habits of the bird are comparatively unknown, or at least have not as yet been very fully recorded.

NORTHERN PARULA WARBLER (Compsothlypis americana usneæ)

Range: Breeds mainly in Transition and Austral Zones, from eastern Nebraska, northern Minnesota, central Ontario, and Anticosti and Cape Breton Islands south to central southern Texas, southern Louisiana, Alabama, Virginia, and Maryland; winters probably in the Bahamas and West Indies to Barbados, and from Vera Cruz and Oaxaca to Nicaragua.

The northern parula, smallest of our warblers, with prevailing colors blue and yellow, is generally distributed during migration and usually found in company with other warblers in leafy trees, which it explores from the lower to the topmost branches. It is one of the most active of the tribe, and is untiring in its pursuit of the minute insects which form its food. Its habit of hanging head downward as it explores a cluster of blossoms suggests a chickadee, and the little fellow is a combination of warbler, kinglet, and chickadee. It is very partial to nesting in usnea moss and so is found in summer along streams or in swampy localities where long streamers of the usnea festoon the trees. The preference of the parula for this moss as a site for its nest is exemplified by a nest I once found in Maryland on the bank of the Potomac, which had been built in the frayed end of an old rope hanging to a sapling and which a short distance away looked to me—and no doubt to the bird—exactly like a clump of usnea. As no usnea occurred in this locality, the bird accepted the frayed rope as a satisfactory substitute, and in so doing followed the spirit if not the letter of family tradition. However, the parula is not strictly limited to usnea for a nesting site and I once saw a pair carrying shreds of bark into a juniper on an island in the Potomac River, the nest being already far advanced toward completion. The parula has a short, buzzing song of which it is prodigal enough, but it is weak and can be heard at no great distance.

CAPE MAY WARBLER (Dendroica tigrina)

Range: Breeds in Canadian Zone from southern Mackenzie, northern Ontario, New Brunswick, and Nova Scotia south to Manitoba, northern Maine, and New Hampshire, and in Jamaica; winters in the Bahamas and the West Indies to Tobago.

Not only is the Cape May one of our most beautiful warblers, but its rarity adds greatly to the zest with which one hails the discovery of even an individual. This species, however, is far more numerous even in New England, especially in fall, than it used to be, and in time the bird may even be listed in many of the Eastern States as among the more common migrants.

Although the bulk of the species undoubtedly migrates north through the Mississippi Valley, rarely a spring passes that a few individuals are not reported about Washington, D. C., and I have seen several in a day. At this time of year the Cape May often forsakes the woodlands and appears in orchards or even in city parks, and probably not a season passes that one or more do not visit the Smithsonian or Agricultural Department grounds. Chapman tells us that in Florida he has seen the species "actually common feeding in weedy patches among a rank growth of pokeberries."

The bird is a rather sluggish, but persistent, insect hunter, though it adds to its bill of fare one item, grapes, which is bringing it into ill repute in parts of Pennsylvania and Virginia. The sharp-pointed bill of the Cape May enables it readily to puncture the skin, its apparent purpose being to satisfy its thirst with the sweet juice.

The Cape May is a persistent songster, but its song is weak and squeaky and by no means worthy of so superb a creature. Comparatively little is recorded of this bird's nesting habits. It is known to summer from northern Maine northward. A nest found by Banks at St. Johns, New Brunswick, was built in a cedar less than three feet from the ground.

BLUE-WINGED WARBLER (Vermivora pinus)

(For illustration, see page 308)

Range: Breeds from southeastern Minnesota, southern Michigan, western New York, Massachusetts (rarely), and southern Connecticut south to northeastern Kansas, central Missouri, Kentucky, Maryland, and Delaware; winters from southern Mexico (Puebla) to Guatemala.

Like the golden-wing, the blue-winged warbler is confined to the Eastern States, but it ranges considerably farther west than that species and occurs almost or quite to the Plains. The blue-wing is in many ways an inconspicuous member of the warbler group, but, because of its perplexing relationship with the golden-wing, Brewster's warbler, and Lawrence's warbler, its ornithological interest is excelled by few. Like the golden-wing, it prefers deciduous trees and second growths and shuns the deeper parts of the forests. It has the habit—shared by the golden-wing and chickadee—of hanging from the under side of any particular cluster it wishes to investigate, and no doubt it makes sure of insects that defy the less careful search of most other species. The ordinary song of the blue-wing is comparable to the golden-wing's, being in fact little else than an apology for a song, with the same insectlike quality. This warbler, though of distinctly arboreal habits, prefers to nest on the ground, or a few inches above it, in a tuft of grass, a clump of goldenrods, or at the foot of a sapling.

The nest is rather bulky, composed of leaves and grasses, put together after the artless manner of its kind; but it is usually well concealed by the surrounding screen of grass or weeds from any but chance discovery.

BLACK-THROATED BLUE WARBLER (Dendroica cærulescens cærulescens)

Range: Breeds in Canadian and Transition Zones from northern Minnesota, central Ontario, and northeastern Quebec south to central Minnesota, southern Michigan, southern Ontario, Pennsylvania (mountains), and northern Connecticut; winters from Key West, Florida, to the Bahamas, Greater Antilles, and Cozumel Island.

The male black-throated blue warbler is one of the most conspicuous of the warblers, his black throat and blue back serving to distinguish him at all times and all seasons. The female, despite her inconspicuous coloration, may always be identified by the white spot on the primaries. The bird is common and ranges widely through eastern North America, and few flocks of migrating warblers are without a greater or less number of this species. Though in the main a common resident of the northern woods, in the mountains it breeds as far south as Maryland, while a color variety of the bird (*Dendroica cærulescens cairnsi*) nests in the southern Alleghenies from Pennsylvania south to Georgia.

Thayer, as quoted by Chapman, says of the song: "There is not a more regularly and amply versatile singer among our eastern warblers than the black-throated blue. It has at least four main songs, on which it is forever playing notable variations."

Whether in its northern or southern home, the black-throated blue warbler builds its nest of bark, roots, and other pliant material, loose and rather bulky, in a variety of saplings, bushes, and weeds, but always a few inches or a few feet from the ground.

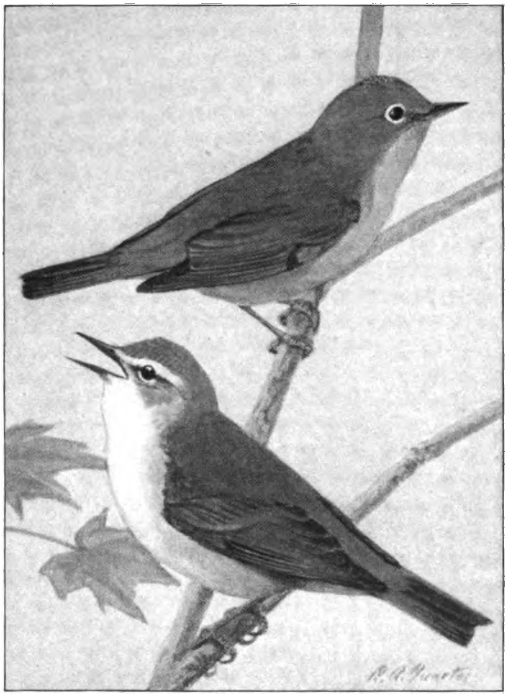
NASHVILLE WARBLER (Vermivora rubricapilla rubricapilla)

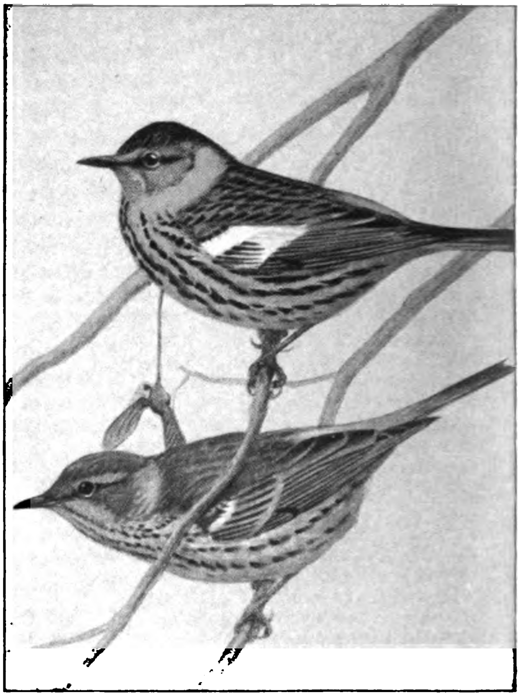
Range: Breeds in Canadian and Transition Zones from southern Saskatchewan, northern Ontario, central Quebec, and Cape Breton Island south to Nebraska, northern Illinois, northern Pennsylvania, northern New Jersey, and Connecticut; winters from Vera Cruz and Chiapas to Guatemala.

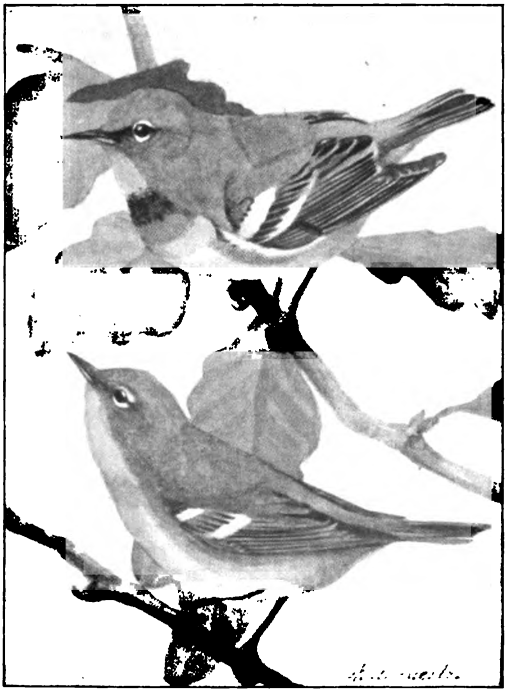
As Wilson never saw but three individuals of the Nashville warbler, all taken near Nashville, Tennessee, he not unnaturally named his new discovery for that city, apparently believing it to be a local species. Far from being so, however, it is now known to inhabit most of the eastern United States. Without doubt the bird is much more common than it was in Wilson's time, perhaps due to the fact that second growth and areas of low woods, its preferred haunts, have largely replaced the denser forests of the early part of the nineteenth century. One cannot wander far afield in Massachusetts in summer time without hearing its song or songs, since it is not only a frequent and vivacious songster, but has a number of ditties in its repertoire, including a flight song.

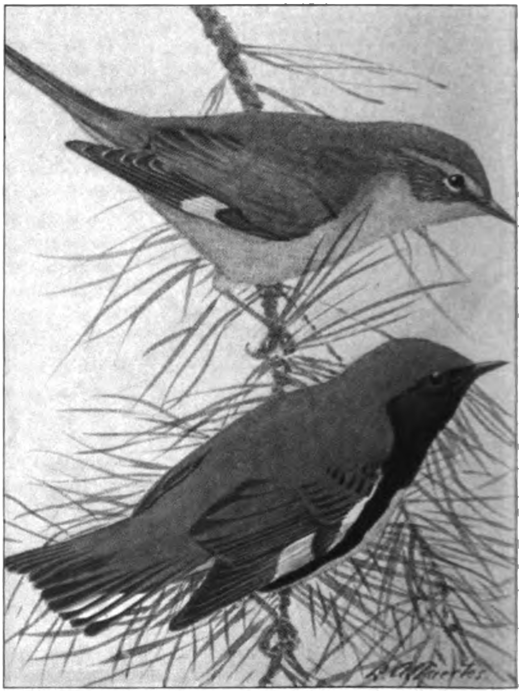
I never found but one nest, and this was on a little pine-wooded knoll in a small depression in the earth, only partially concealed by thin grass. I should never have found it but for the fact that the bird flushed from between my feet. So far as known, the Nashville always nests on the ground. Its preference for the ground as a nesting site is the more remarkable, since the bird rarely or never hunts there, but prefers to seek its insect food among the foliage, often of the tallest elms and chestnuts and other giants of the forest.

The Calaveras warbler (*Vermivora rubricapilla gutturalis*) is a form closely allied to the Nashville, but confined chiefly to the Pacific coast, extending eastward to eastern Oregon and northern Idaho. Fisher is quoted by Chapman as saying: "The Calaveras warbler is a characteristic denizen of the chaparral and is found on both slopes of the Sierra Nevadas about as far south as Mount Whitney. It frequents the belts of the yellow, sugar, and Jeffry pines, and ranges up into the red-fir zone. During the height of the nesting season, while the female is assiduously hunting among the dense cover of bushes, the male is often singing in a pine or fir, far above mundane household cares."







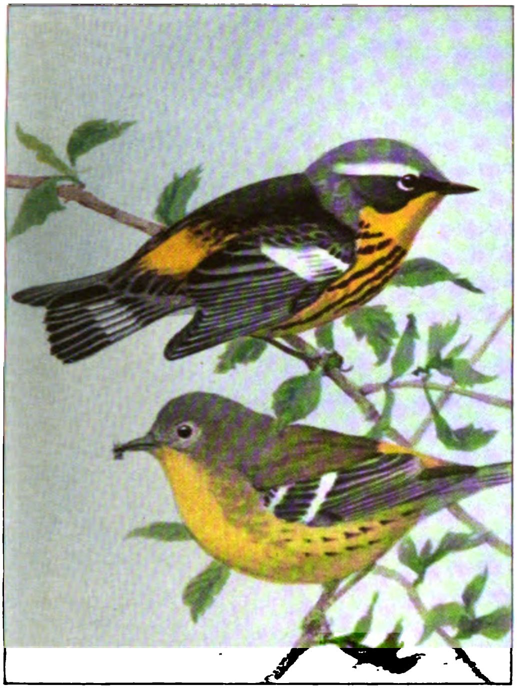


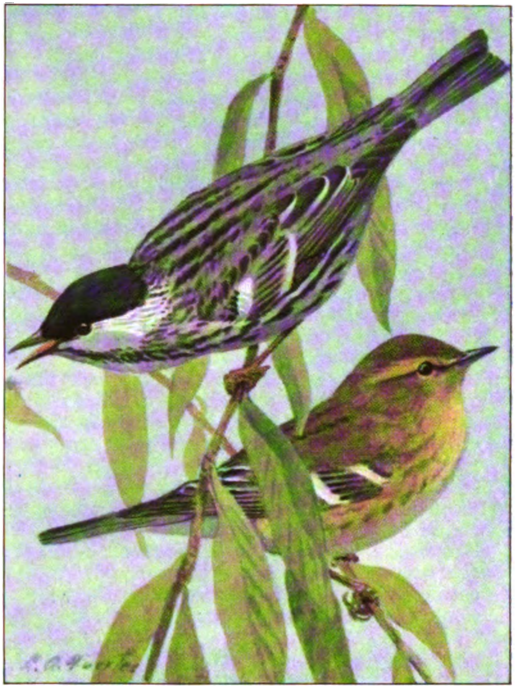
NASHVILLE WARBLER
TENNESSEE WARBLER

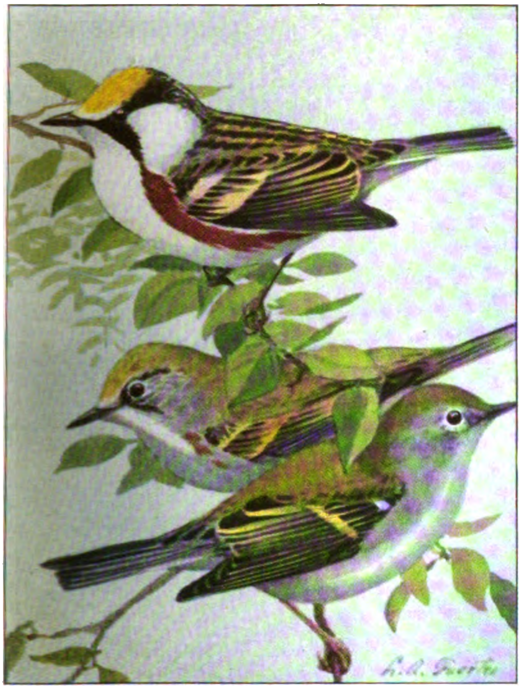
PARULA WARBLER
Male and Female

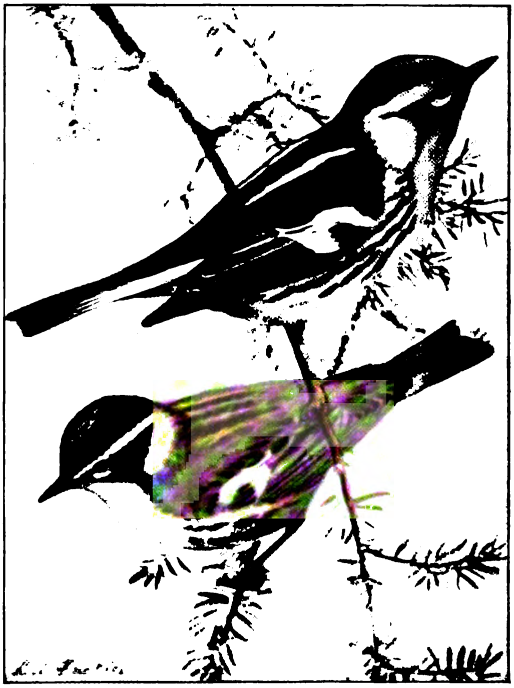
CAPE MAY WARBLER
Male and Female

BLACK-THROATED BLUE WARBLER
Female and Male









MAGNOLIA WARBLER
Adult and Immature Male

CHESTNUT-SIDED WARBLER
Male, Immature Male and Female

BLACK-POLL WARBLER
Male and Female

BLACKBURNIAN WARBLER
Male and Female

CHESTNUT-SIDED WARBLER (Dendroica pensylvanica)

Range: Breeds mainly in the Transition Zone from central Saskatchewan, northwestern Manitoba, central Ontario, and Newfoundland south to eastern Nebraska, Illinois, Indiana, northern Ohio, northern New Jersey, and Rhode Island, and south in the Alleghenies to Tennessee and South Carolina; winters from Guatemala to Panama.

Since the days of Wilson, Audubon, and Nuttall there is little doubt that the chestnut-sided warbler has increased in numbers, and within its range it is now one of the commoner of the family. It is trim of form and its colors, though not gaudy, have a quiet elegance all their own. During the fall migration it shows little preference in its hunting grounds, but is found with others of its kin in all sorts of woodland haunts and in deciduous as well as coniferous trees. It frequents open woodland tracts in summer and loves to nest in low thickets of hazel and barberry. In favorable localities in Massachusetts I have frequently found half a dozen nests in a morning's search. The nests are made of shreds of bark and grasses and are put together so loosely and carelessly that, in connection with their situation, they unmistakably betray their ownership.

KENTUCKY WARBLER (Oporornis formosus)

(For illustration, see page 317)

Range: Breeds in Carolinian and Austroriparian Zones from southeastern Nebraska, southern Wisconsin, southeastern and southwestern Pennsylvania, and the Hudson Valley south to eastern Texas, Louisiana, Alabama, and northern Georgia; winters from Tabasco, Campeche, and Chiapas through Central America to Colombia.

The Kentucky warbler, with its rich colors and symmetrical form, is to be classed among the elect of the warbler tribe. Moreover, while locally common it is never so abundant that it does not excite a thrill of interest in the breast of even the most blasé of bird observers. It loves the deep, dark forest and shaded ravine, where the foliage overhead casts heavy shadows on the plentiful undergrowth beneath and where even in midsummer it is moist and cool.

The bird is a persistent singer, and in its own chosen haunts its loud, sweet song may be heard all day long. There is a curious resemblance between its ditty and that of the Carolina wren, and while no one can mistake the two songs when heard close by, at a distance even the expert may be puzzled. This warbler finds most of its food on the ground, and the thick undergrowth in which it hunts makes it difficult to learn much of its habits by observation, since it is difficult to keep an individual in sight many minutes at a time.

It builds a rather loose, bulky nest, largely of leaves and grasses, which is placed either on or just above the ground, and although it may seem to have been rather artlessly located it is in reality well protected by the surrounding vegetation with which it blends, and hence generally escapes the observation of all but the most persistent and sharp-sighted of observers.

WILSON WARBLER (Wilsonia pusilla pusilla)

(For illustration, see page 320)

Range: Breeds in Boreal Zones from tree limit in northwestern and central Mackenzie, central Keewatin, central Ungava, and Newfoundland south to southern Saskatchewan, northern Minnesota, central Ontario, New Hampshire, Maine, and Nova Scotia; winters in eastern Central America from Guatemala to Costa Rica.

This tiny warbler ventures farther north than many bigger and apparently hardier species, and Nelson found it in Alaska "one of the commonest of the bush-frequenting species, . . . extending its breeding range to the shores of the Arctic Ocean wherever it finds shelter." Cooke also found it in Colorado breeding from 6,000 to 12,000 feet elevation.

The black-cap is a nervous, energetic, little fellow, now essaying the rôle of flycatcher, now hunting for insects among the foliage, while ever and anon it jerks its tail up and down as though constant motion were the chief end of existence. It has a short, bubbling, warbling song which has been likened to the songs of several other species, but which possesses a tone and quality all the bird's own. Its nest is built on the ground, is composed chiefly of grasses, and the eggs do not differ in essential respects from those of other warblers.

It is noteworthy that the West Coast form of the black-cap chryseola breeds as far south as Los Angeles, and that its nest instead of being built on the ground is placed in the crotch of a limb or in a bunch of weeds or nettles.

CANADA WARBLER (Wilsonia canadensis)

(For illustration, see page 320)

Range: Breeds in the Canadian Zone and casually in the Transition from central Alberta, southern Keewatin, northern Ontario, northern Quebec, and Newfoundland south to central Minnesota, central Michigan, southern Ontario, central New York, and Massachusetts, and along the Alleghenies to North Carolina and Tennessee; winters in Ecuador and Peru.

The Canada warbler is always associated in my mind with the black-cap, in company with which it is frequently found during migration. The association is purely accidental and results from a common preference for the same hunting grounds. A path or road through swampy ground, especially if bordered by old willow trees, is sure to have its quota of this warbler and the Wilson black-cap during migration.

Like the black-cap, the Canada warbler is half flycatcher, half warbler, and the click of the bird's mandibles as they close on some hapless insect caught in mid-air is often the first indication of its presence. Unlike many of the family, it sings much during its spring migration. The song is loud for the size of the warbler and is very characteristic. The bird builds a rather bulky nest of leaves and grasses, which it places in a mossy bank or under a moss-grown log. It is an assiduous and active insect hunter and gleans among the leaves and twigs after the fashion of the parula warbler.

MAGNOLIA WARBLER (Dendroica magnolia)

Range: Breeds in Canadian and upper Transition Zones from southwestern Mackenzie, southern Keewatin, northern Quebec, and Newfoundland south to central Alberta, southern Saskatchewan, Minnesota, northern Michigan, and northern Massachusetts, and in the mountains of West Virginia, Maryland, Pennsylvania, and New York; winters from southern Mexico (Puebla and Chiapas) to Panama.

The magnolia, or black and yellow warbler, as I like best to call it, is one of our most beautiful warblers, and fortunately, being one of the commonest of the tribe, is easily met with by any one willing to take a little pains. When busy at its self-imposed task of hunting insects—and when is it not busy—it is by no means shy, and may be watched at close range with or without the aid of a field glass. Whenever or however met, the sight of a full-plumaged male resplendent in the gold and black livery of spring is worth a long journey.

The bird ranges over much of eastern North America as far west as the Plains, and toward the north reaches the Mackenzie region. In the mountains it breeds here and there as far south as Maryland. In migration the magnolia shows no preference for special localities, but occurs in upland woods and lowland shrubbery where is promised a good harvest of insects. Like so many of its fellows, it finds rich hunting grounds in gray birches, and few large companies of warblers traverse gray birch woods without their complement of these beautiful and sprightly wood nymphs. The magnolia warbler is a versatile, though scarcely an accomplished, songster, and phrases its song in a number of different ways. Many of its nests have been found in the northern woods, some of them in small firs or spruces only a few feet from the ground.

BLACK-POLL WARBLER (Dendroica striata)

Range: Breeds in Hudsonian and Canadian Zones from limit of trees in northwestern Alaska, northern Mackenzie, central Keewatin, northern Ungava, and Newfoundland south to central British Columbia, Manitoba, Michigan, northern Maine, and mountains of Vermont and New Hampshire; winters from Guiana and Venezuela to Brazil.

The black-poll is one of our commonest warblers, in both spring and fall, and probably heads the warbler list in point of numbers. So far as superficial observations go. the bird would seem to be no spryer, no more industrious, and no more adept in hunting food than its compeers; but for some reason or other. possibly greater adaptability, it seems to have succeeded beyond most of its kind in extending its breeding range and in multiplying. It is a late migrant, both spring and fall, and when the hordes of black-polls put in an appearance, especially in the vernal season, one may know that the end of the migrating season is at hand. A laggard in spring, it is also a loiterer in fall, and occasionally a flock of black-polls will linger in some sheltered valley where food is abundant till long after others of the family have passed southward.

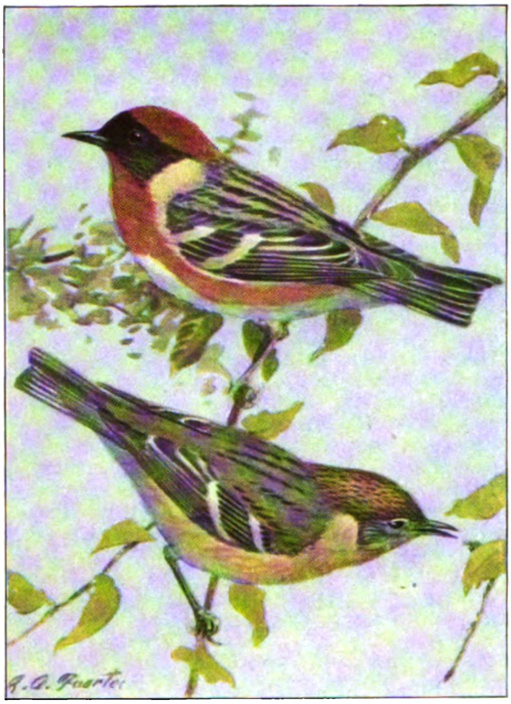
The bird nests chiefly in the far north, though it summers as far south as the Adirondacks. As it winters in South America, there are thus at least 5,000 miles between its extreme northern and southern habitats. Chapman notes that it is one of the very few warblers that migrate directly across the West Indies from South America to Florida. It makes its appearance in the Gulf States about the last of April. As pointed out by Professor Cooke, the black-poll is "one of the greatest travelers among the warblers. The shortest journey that any black-poll performs is 3,500 miles, while those that nest in Alaska have 7,000 miles to travel to their probable winter home in Brazil." One can only wonder that so small a bird has the requisite courage and strength to undertake twice a year such a vast journey, every stage of which is compassed by dangers of one sort or another.

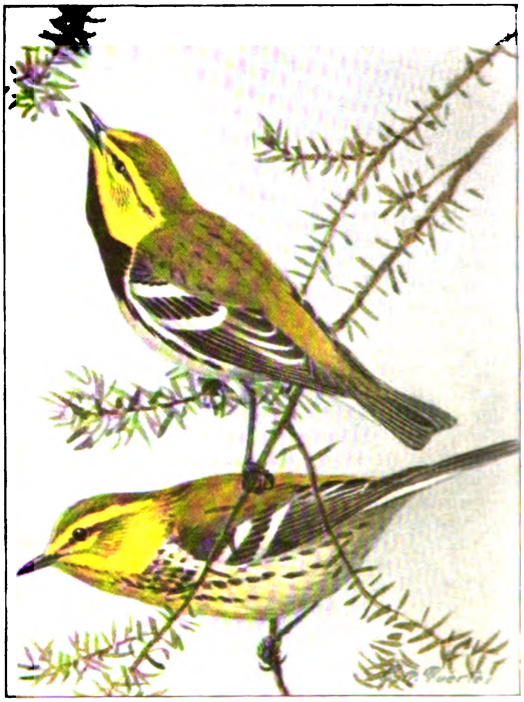
BLACKBURNIAN WARBLER (Dendroica fusca)

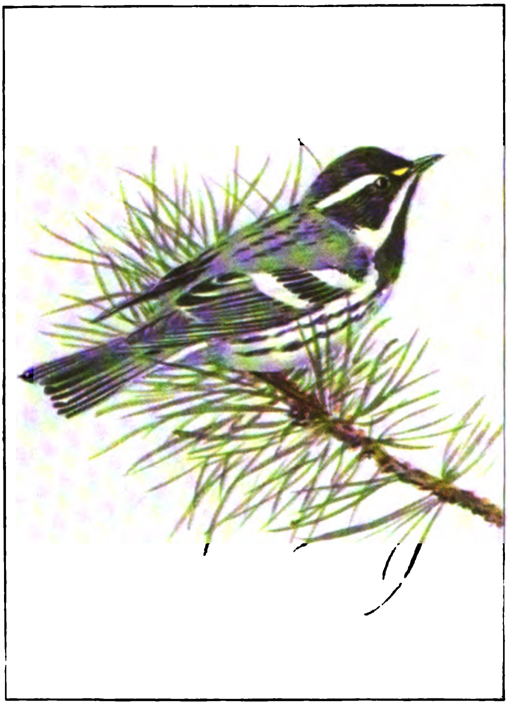
Range: Breeds in lower Canadian and upper Transition Zones from Manitoba, southern Keewatin, central Ontario, Quebec, and Cape Breton Island to central Minnesota, Wisconsin, northern Michigan, Massachusetts, and Connecticut, and in the Alleghenies from Pennsylvania to Georgia and South Carolina; winters from Colombia to central Peru and less commonly north to Yucatan.

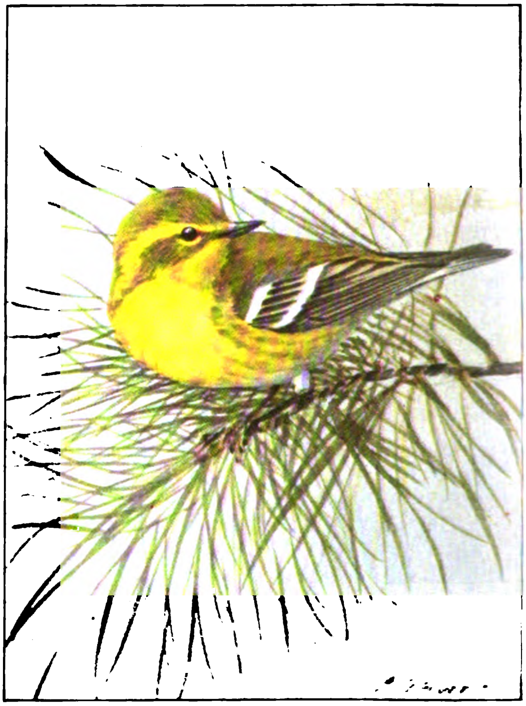
The Blackburnian, one of the gems of the warbler tribe, has a rather wide range in eastern North America, extending west as far as the Plains and north to Manitoba. Apparently it is nowhere, at least in migration, an abundant warbler, and there are few field observers so seasoned to the sight of its beautiful colors as not to be thrilled by sight of the bird. In migration its habits offer nothing peculiar. In the Atlantic States in September careful scrutiny of a migrating band of warblers and other birds will often reveal the presence of one or perhaps half a dozen Blackburnians. About Mount Monadnock, Gerald Thayer finds it a "very common summer resident. It is one of the four deep-wood warblers of this region, the other three being the black-throated blue, the Northern parula, and the Canada."

The Blackburnian favors very big trees, particularly hemlocks, and spends most of its life high above the ground. As Thayer says, the Blackburnian is the "preëminent forest warbler of the group, the lover of deep mixed growth and the upper branches of the biggest conifers." The bird has a thin, shrill voice and utters at least two songs or variations which some think resemble the black-throated green's. Whatever the tree selected, be it a hemlock or a deciduous tree, the nest is placed well up among the branches and well out toward the end, where it is safe from all enemies that do not possess wings.







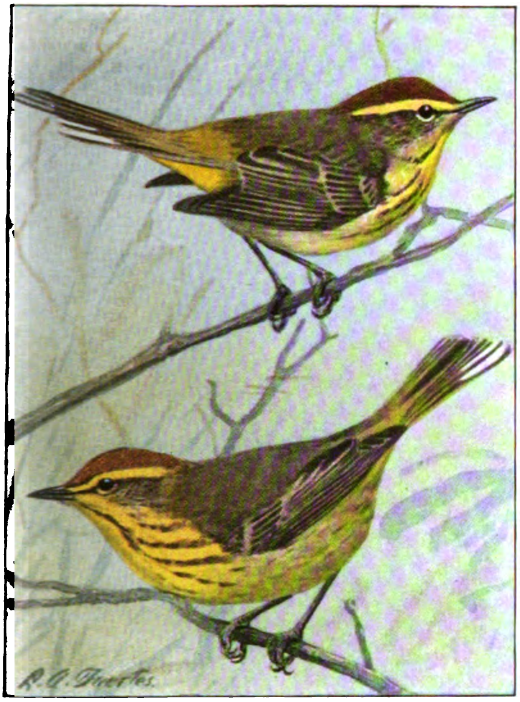


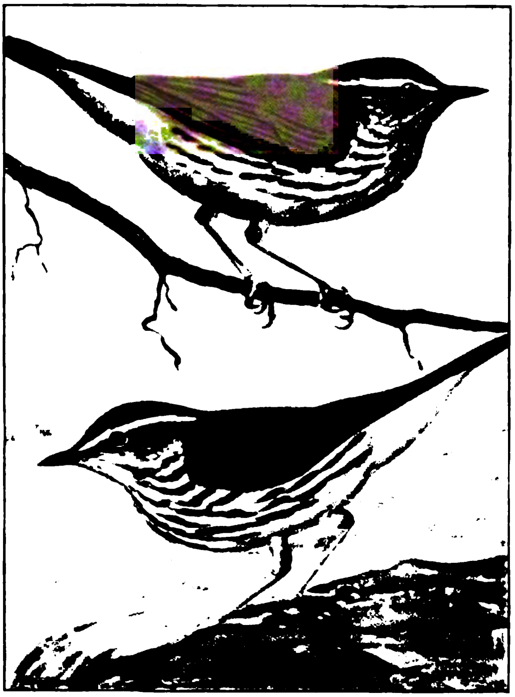
BAY-BREASTED WARBLER
Male and Female

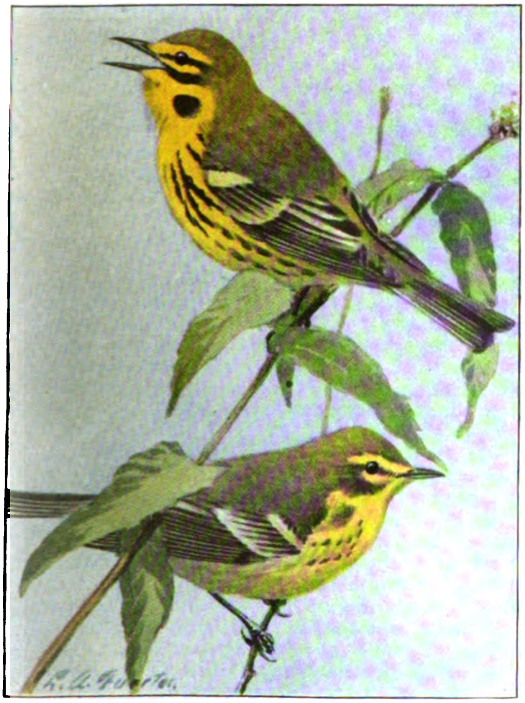
BLACK-THROATED GRAY WARBLER

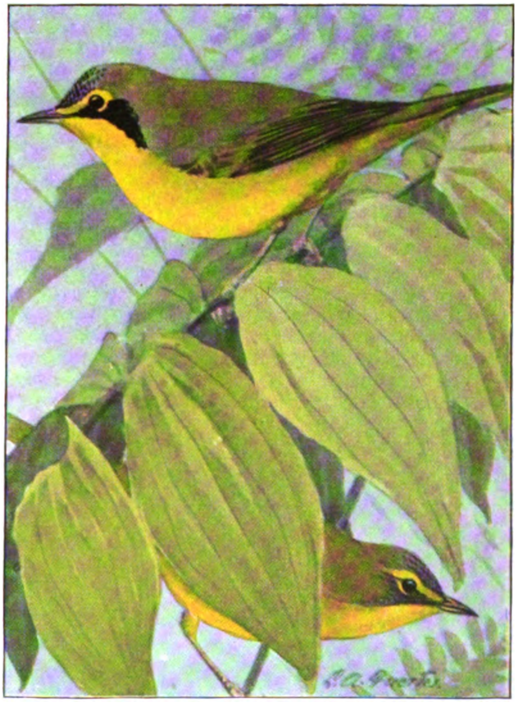
BLACK-THROATED GREEN WARBLER
Male and Female

PINE WARBLER









PALM WARBLER
YELLOW PALM WARBLER

PRAIRIE WARBLER
Male and Female

NORTHERN WATER-THRUSH
LOUISIANA WATER-THRUSH

KENTUCKY WARBLER
Male and Female

BAY-BREASTED WARBLER (Dendroica castanea)

Range: Breeds in Canadian Zone from northeastern Alberta, southern Keewatin, southern Ungava, and Newfoundland south to southern Manitoba, northern Maine, and mountains of New Hampshire; winters in Panama and Colombia.

The bay-breast appears to be increasing in numbers. Forty years or so ago it was rare in Massachusetts in fall, and search by the most vigilant collector during the entire autumn migration was rarely rewarded by the sight of more than one or two. Today it is far different, and not a season passes that at the proper time and place careful search will not reveal a dozen or more mingled with others of the warbler family. In spring the bird has always been uncommon or altogether wanting in the Eastern States, as it migrates up the Mississippi Valley, spreading out to occupy northern Maine and other of its northern summer haunts. In summer it frequents coniferous forests, and often nests in hemlocks.

BLACK-THROATED GRAY WARBLER (Dendroica nigrescens)

Range: Breeds in Transition Zone from southern British Columbia, Nevada, northern Utah, and northwestern Colorado south to northern Lower California, southern Arizona, and northern New Mexico; winters in southern Lower California and in Mexico from Durango to Michoacan, Vera Cruz, and Oaxaca.

The handsome black-throated gray warbler is exclusively western in distribution, from our southern border to British Columbia. Though I have seen it many times, I am unable to recall any especially salient characteristics possessed by the species. Like others of the family, the black-throat is an active insect hunter, both among the oaks and various kinds of scrub growths of the valleys and the conifers of higher altitudes. The bird seems naturally to suggest the black-throated green warbler of the Eastern States, but I am not aware that in habits it is more nearly comparable to that species than to others. In choice of nesting sites it exhibits a wide range of taste, and nests have been found in scrub oaks, pines, and firs, and varying in height from the ground from 3 or 4 feet up to 50 feet or more.

BLACK-THROATED GREEN WARBLER (Dendroica virens)

Range: Breeds in lower Canadian and Transition Zones from west, central, and northeastern Alberta, southern Manitoba, central Ontario, northeastern Quebec, and Newfoundland south to southern Minnesota, southern Wisconsin, northern Ohio, northern New Jersey, Connecticut, and Long Island, New York, and in the Alleghenies south to South Carolina and Georgia; winters in Mexico (Nuevo Leon to Chiapas and Yucatan), Guatemala, Costa Rica, and Panama.

What true bird lover is there who does not cherish fond memories of certain birds? The very name of black-throated green warbler carries me back to boyhood days and to a certain pine-crested hill in Massachusetts, from which was wafted on an early spring morning the song of this warbler, heard by me then for the first time. The many years since elapsed have not effaced the sweet strains, and I seem to hear them now as they were borne that morning by the pine-scented spring breeze. I can vividly recall the pleasure the song occasioned and the satisfaction of having added one more bird to my small list of avian acquaintances. Those were the days of mystery, when the woods seemed filled with unknown birds, and secrets lurked in every thicket and met the seeker at every turn. They were the times when bird books were few, keys unknown, and the keen eyes of youth far more satisfactory than the best field glasses of the present day.

The black-throated green is one of the commoner of our eastern warblers and one of the first to engage the attention of the bird student. During migration it may be met with in every kind of woodland, where it is at home, both high and low, ever pursuing with tireless energy its quest for insects. It has two songs, or rather one song delivered in two different ways, sprightly, sweet, and perfectly characteristic. In summer it is partial to coniferous woods, especially white pines and hemlocks, and it frequently nests in these, though also in birches and alders.

PINE WARBLER (Dendroica vigorsi)

Range: Breeds in Transition and Austral Zones from northern Manitoba, northern Michigan, southern Ontario, southern Quebec, and New Brunswick south to east-central Texas, the Gulf States, and Florida; winters from southern Illinois and coast of Virginia to Florida, eastern Texas, and Tamaulipas.

Few of our birds are so aptly named as the pine warbler, which first, last, and all the time, except in migration, resorts to pine woods. It summers in them in the north and it winters in them in the south. Even its feathers often bear conclusive evidence of its predilection for pines, being often besmeared with their gum. Among its bright-hued relatives the pine warbler cuts but a poor show with its somber green and brown coat, which, at least in Florida, is often dingy and smoke-begrimed from contact with burnt timber.

Though distinctively a warbler and not a creeper, the pine warbler is more deliberate in its motions than most of its kind and, somewhat in the manner of the creeper, moves among the branches or over the trunks in search of its insect food. For a warbler it is an early migrant and reaches the latitude of Massachusetts soon after the middle of April. Indeed, its nest contains eggs or young while the late migrants are still passing north. Its song has little variation, but while monotonous is pleasing and sweet, far sweeter than the trill of the chipping sparrow, which it recalls. Naturally the pine warbler nests in pines, usually rather high up, either on a horizontal limb or among the twigs at the extremity of a limb.

PALM WARBLER (Dendroica palmarum palmarum)

Range: Breeds in Canadian Zone from southern Mackenzie (Fort Simpson) and central Keewatin south and southeast to northern Minnesota; winters from southern Florida and the Bahamas to the Greater Antilles and Yucatan.

The palm warbler, including under this name both the eastern and western, or yellow (*Dendroica palmarum hypochrysea*), representatives of the species, is for the most part an inhabitant of the Mississippi Valley and the region eastward, spending its nesting season chiefly north of our northern frontier. It is, therefore, as a spring and fall migrant that it is best known. Its somewhat subdued tints of olive and yellow streaked with brown class it among the less conspicuous members of the warbler group, but its motions and habits unmistakably distinguish it from its fellows. Though often associating with other warblers as they flit from tree to tree, the palm warbler keeps close to Mother Earth and not infrequently visits pastures and stubble far from cover of any sort. Favorite hunting grounds are old fences and even buildings.

Perhaps the most salient characteristic of this little warbler is the almost incessant tip-up motion of its tail, in which respect it recalls a bird in no wise related to it—the spotted sandpiper, or "tip-up," of pond and stream. It nests on the ground. Its song is a low, faint trill, characteristically warblerlike, but in no way remarkable. It winters in great numbers in Florida, and in 1871 I found it wintering in loose flocks of considerable size near Lakes Borgne and Ponchartrain, Louisiana, where it fed chiefly on the ground and among low bushes.

PRAIRIE WARBLER (Dendroica discolor)

Range: Breeds chiefly in Carolinian and Austroriparian Zones from southeastern Nebraska, eastern Kansas, southern Ohio, southwestern Pennsylvania, southern New Jersey, and (along the coast) from Massachusetts south to southwestern Missouri, northern Mississippi, northwestern Georgia, Florida, and the Bahamas, and north locally to central Michigan, southern Ontario, and New Hampshire; winters from central Florida through the Bahamas and the West Indies.

The prairie, a dainty little warbler in its variegated black, yellow, and chestnut dress, is common from Florida to the New England States and from Nebraska and Kansas east to the Atlantic. Its choice of habitat varies considerably locally; but wherever it may be found there is nothing in the habits of the bird that justifies its common name, which is entirely misleading, since it has no predilection for prairies or indeed for open country of any sort. In Massachusetts it frequents rocky barberry pastures on open hillsides dotted with cedars. About Washington it frequents sprout lands, and when it first arrives from the south is found almost exclusively in groves of the Jersey scrub pine or in junipers. It is an active insect hunter, moving rapidly among the foliage, now here, now there, ever and again sending forth its characteristic song. Its unusually compact and pretty nest is often placed in the crotch of a barberry bush in Massachusetts or elsewhere in junipers or in low deciduous bushes.

NORTHERN WATER-THRUSH (Seiurus noveboracencis noveboracensis)

Range: Breeds chiefly in Canadian Zone from northern Ontario, northern Ungava, and Newfoundland south to central Ontario, northwestern New York, and northern New England, and in mountains south to Pennsylvania and West Virginia; winters from the Valley of Mexico to Colombia and British Guiana, and from the Bahamas throughout the West Indies.

So far as appearance, motions, and habits go, the water-thrush is more thrush than warbler, and one who sees him for the first time walking sedately along with teetering tail may well be excused for declining to class him with the warbler family. He is partial to swamps and wet places, is a ground frequenter, and in no real sense arboreal. Though an inhabitant of the wilds and showing strong preference for swampy ground, he not infrequently visits gardens even in populous towns, and seems to be quite at home there in the shade of the shrubbery. A sharp and characteristic alarm note often calls the attention of the chance passer-by, who would otherwise overlook the bird in its shady recesses.

Few who are privileged to hear its notes will dissent from the opinion that the water-thrush is one of the foremost of the warbler choir and a real musician. The bird is a ground builder, placing its nest under the roots of an upturned tree, in banks, or in cavities of various sorts.

LOUISIANA WATER-THRUSH (Seiurus motacilla)

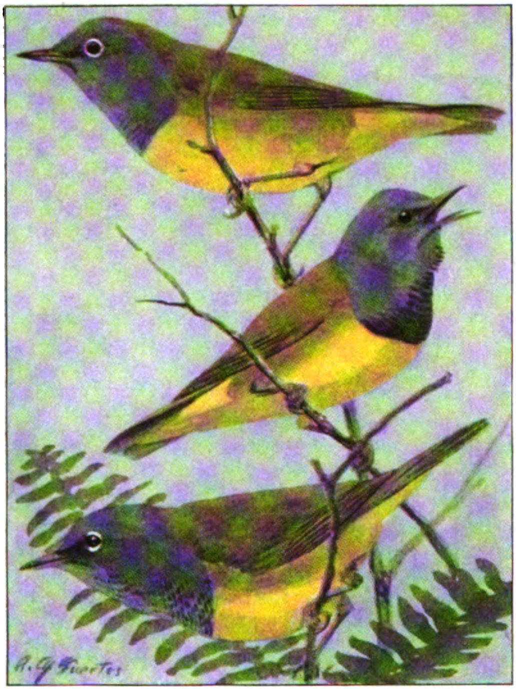
Range: Breeds mainly in Carolinian Zone from southeastern Nebraska, southeastern Minnesota, and the southern parts of Michigan, Ontario, New York, and New England south to northeastern Texas, northern Georgia, and central South Carolina; winters from northern Mexico to Colombia, the Greater Antilles, Antigua, and the Bahamas.

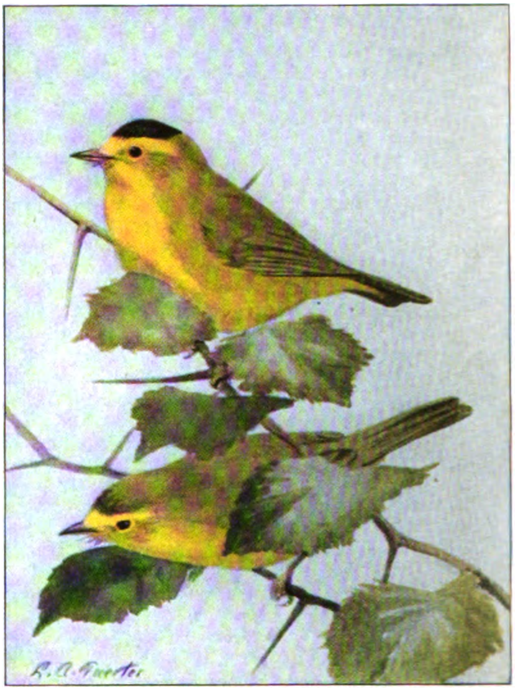
The Louisiana water-thrush, though not unlike its northern relative in general appearance, is very different in disposition and habits, and I know of no bird more shy and difficult to watch. It frequents the banks and neighborhood of clear streams that run through woodlands and tangles of laurel. One hears the sharp note of challenge or the wild ringing song, but any attempt to see the singer, unless made with the utmost caution, will end in disappointment or in a casual glimpse of a small, brown bird flitting like a shadow through the brush.

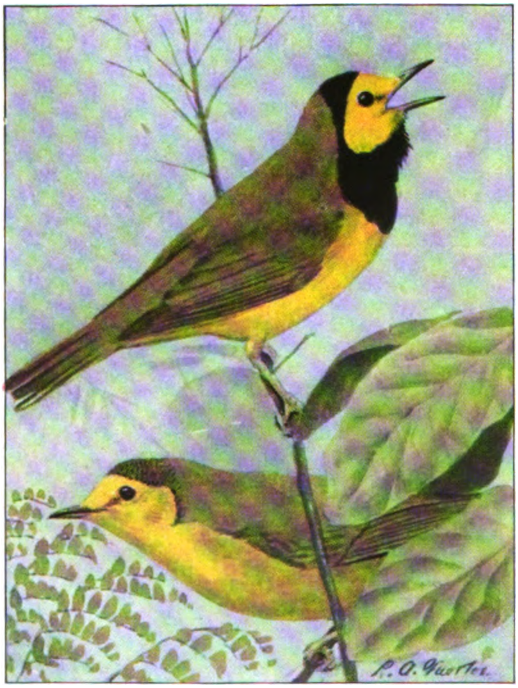
The song of either water-thrush is of a high order of excellence. I cannot but think, however, that the song of the Louisiana water-thrush gains over that of its tuneful rival by partaking somewhat of the nature of its wild surroundings, and that its song is enhanced by its accompaniments—the murmur of the woodland brook and the whisper of the foliage—among which it is heard. Quite a number of our birds habitually teeter or wag their tails, but few as persistently as the water-thrushes.

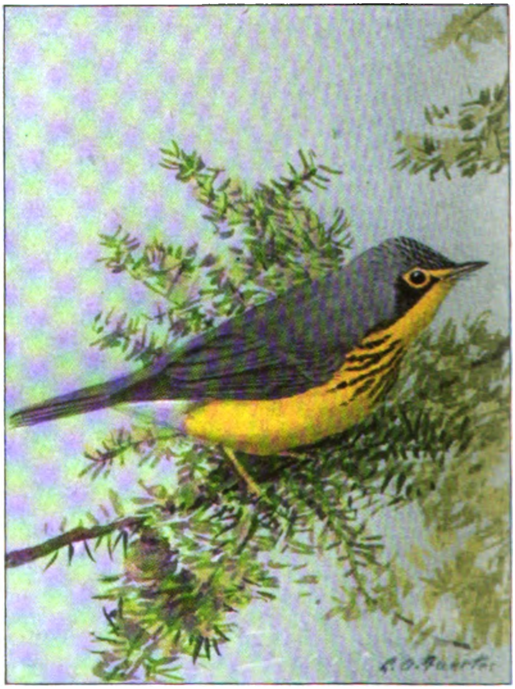
KENTUCKY WARBLER (Oporornis formosus)

(For text, see page 314)









CONNECTICUT WARBLER
MOURNING WARBLER
MACGILLIVRAY WARBLER

HOODED WARBLER
Male and Female

WILSON WARBLER
Male and Female

CANADA WARBLER

CONNECTICUT WARBLER (Oporornis agilis)

Range: Breeds in Canadian Zone from Manitoba to central Minnesota and northern Michigan; winters in South America, probably in Colombia and Brazil.

Discovered by Wilson in Connecticut early in the last century, the Connecticut warbler remained almost unknown for many years until, September 7, 1870, I found it numerous in the fresh pond swamps of Cambridge. The bird thus rediscovered rapidly came into the limelight, and there are few eastern observers of the present day who are not tolerably familiar with the appearance and habits of this warbler. In fall it is common throughout eastern United States in low, swampy thickets. It habitually feeds on the ground, and is so silent and shy as easily to escape the notice even of one on the lookout for it, especially as its single chirp of alarm is infrequently uttered. In fact, the only way to be sure that one or more Connecticut warblers are not concealed in the shrubbery of a suspected locality is to beat over it systematically, not once, but many times.

When started, the warbler flies noiselessly to the nearest shaded perch, and there sits motionless, watching the intruder, till it decides either to renew its interrupted search for food or to seek some distant place, far from the danger of intrusion. Under such circumstances its motions are highly suggestive of the staid and quiet thrushes, and in no respect similar to the sprightly warblers. The Connecticut is one of the few species that for some reason choose distinct routes of migration, as in spring it passes up the Mississippi Valley instead of through the Atlantic Coast States, which form its southern route in fall. The bird is known to breed in Michigan, Wisconsin, Minnesota, Manitoba, and elsewhere in the north. The only nest so far found, however, appears to be one discovered by Seton in Manitoba. As was to be expected, it was on the ground.

MOURNING WARBLER (Oporornis philadelphia)

Range: Breeds in lower Canadian Zone from east central Alberta, southern Saskatchewan, southwestern Keewatin, Nova Scotia, and Magdalen Islands south to central Minnesota, Michigan, central Ontario, and mountains of New York, Pennsylvania, Massachusetts, and West Virginia; winters from Nicaragua and Costa Rica to Colombia and Ecuador.

The mourning warbler is a near cousin of the Maryland yellow-throat and, like that bird, sticks rather closely to Mother Earth, being no lover of tree-tops. Unlike the yellow-throat, however, it is one of the rarest of the family, and few ornithologists have ever enjoyed opportunity to get on familiar terms with it and to observe its habits adequately.

Most observers, like myself, have come across a few in migration from time to time, chiefly in spring, when the birds' habits may be described in general terms as a combination of those of the Maryland yellow-throat and the Connecticut warbler. During the spring migration it frequents brushy hillsides and damp thickets, and in the nesting season seems partial to briar patches, in which it places its bulky nest of leaves and stalks.

The song is said to be rich and full and has been compared with that of the Maryland yellow-throat and the water-thrush.

MACGILLIVRAY WARBLER (Oporornis tolmiei)

Range: Breeds mainly in the lower Canadian and Transition Zones from central British Columbia, central Alberta, and southern Saskatchewan south to southern California, southern Arizona, and northern New Mexico, and from the Pacific coast to the eastern foothills of the Rocky Mountains and southwestern South Dakota; winters from Lower California to Colombia.

Though closely resembling the mourning warbler in appearance and representing that bird in the west, the Macgillivray warbler differs widely in habits. Thus it is far more generally distributed, both in the mountains and in the lowlands, and is much more numerous. In my own experience I have found it in summer chiefly in moist thickets of willows or other brush along streams, and a suitable locality is rarely without a pair or two. Other observers, however, have found the bird on dry brushy hillsides. This warbler nests from a few inches to a few feet above the ground. It has a short, though pleasing, song which is repeated at brief intervals.

HOODED WARBLER (Wilsonia citrina)

Range: Breeds in Carolinian and Austroriparian Zones from southeastern Nebraska, southern Iowa, southwestern Michigan, central New York, and the lower Connecticut Valley south to Louisiana, Alabama, and Georgia; winters from Vera Cruz and Yucatan to Panama.

While the hooded warbler has a wide range in eastern United States, its center of abundance is the lower Mississippi Valley. It is common only locally and wholly absent from many sections except as a casual migrant. Of the bird, one of our most beautiful warblers, Chapman says:

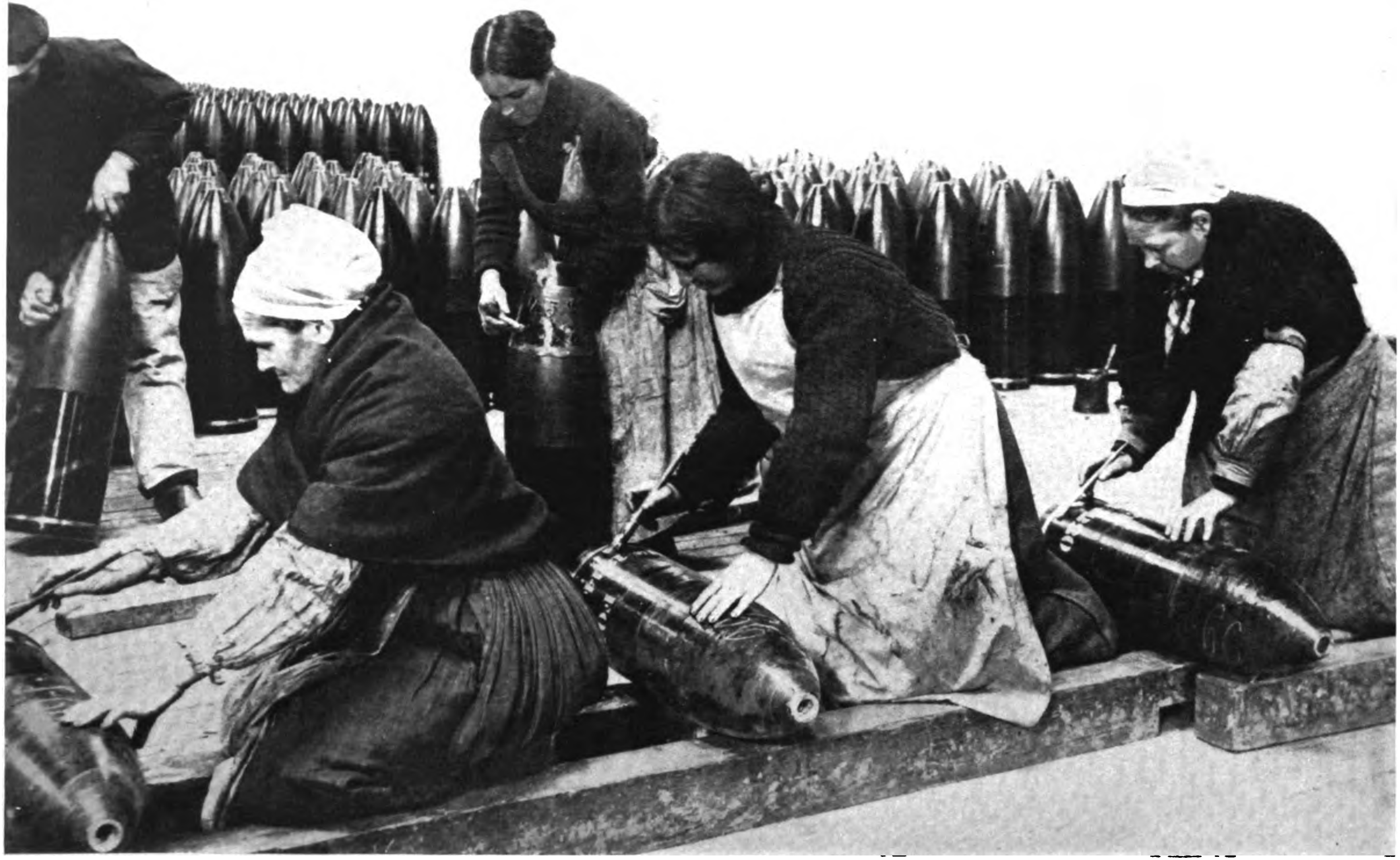
"To my mind there is no warbler to which that much misused word 'lovely' may be so aptly applied as to the present species. Its beauty of plumage, charm of voice, and gentleness of demeanor make it indeed not only a lovely, but a truly lovable bird. Doubtless, also, the nature of the hooded warbler's haunts increases its attractiveness not merely because these well-watered woodlands are in themselves inviting, but because they bring the bird down to our level. This creates a sense of companionship which we do not feel with the bird ranging high above us, and at the same time it permits us to see this exquisitely clad creature under most favorable conditions."

WILSON WARBLER (Wilsonia pusilla pusilla)

(For text, see page 314)

CANADA WARBLER (Wilsonia canadensis)

(For text, see page 314)



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MUNITIONS MANUFACTURING IS NO RESPECTER OF AGE

Many of the women of France who are doing their bit in the production of large-caliber shells for the big guns at the front have completed their allotted threescore years and ten, yet they gladly give the closing days of their lives "for France." In many cases their labor is all that they have left to give, for grandsons, sons, and husbands already have been sacrificed on the firing line.

THE BURDEN FRANCE HAS BORNE

By Granville Fortescue

FRANCE has taken war's foulest blows full on her breast. During the first two years of conflict German armies spread across her most productive provinces like a gray corroding acid, eating through farm, orchard, factory, home, destroying the most valuable property and most useful lives of the French nation.

But this scorification did not crush the spirit of France. Rather the enemy outrages — ruined cathedrals, ransacked homes, ravaged women — roused the French people to a terrible realization of the German threat against the world.

For the French man and woman, love of France, under the scourge of war, became a religion—a religion where fathers, mothers, sons, daughters, claimed the highest privilege accorded the Crusader and the ultimate sacrifice that gained the martyr's crown.

The battle which checked the greatest expression of organized savagery the world has seen in 3,000 years is often called the Miracle of the Marne. Surely it was a miracle. During three days lustful Uhlan outguards pointed their blood-stained lance tips at the Eiffel Tower, saying confidently, "Within the week and our flag will float from the highest pinnacle in France." But the God who weaves the world's destiny in mystery heard the prayers of France. The miracle was performed. Paris, the most beautiful achievement of man on earth, was saved from sack and rapine.

INTERPRETING FRENCH PATRIOTISM

It is no easy task to try to interpret French patriotism to our home-staying Americans. Only sympathetic hands can inscribe the long, sad stories of sacrifice which mark the stations of the war in France. When one has lived in the sacred atmosphere of a people daily immolated on the altar of patriotism, one feels a certain unworthiness in sounding the depths of this feeling, of analyzing its springs, of calculating its results.

When the earth's last judgment is given on this great war, France will be deemed to have saved the world from despotism. Diplomats, during many years, have prophesied the contest between democracy and despotism for the domination of the world. In the struggle that endures France is the true champion of democracy, and no better expression of this democratic spirit exists than the French army.

When the French army is mentioned today, the French people is implied, for the whole nation is bound by the most sacred ties to the trials and triumphs of the fighting section of the populace.

THE IDEALS OF FRANCE

Contrasting the French with the German army, we discover, though both are grounded on conscription, they are radically different in their inspiration of service. The French and the German armies are completely separate in soul. History gives us the analogue of variance between the French and German military systems in the story of Greece and Rome. The Roman armies were organized for conquest, with the aim of spreading Roman "kultur" to the southernmost boundaries of Carthage and the northernmost villages of Gaul. The Roman eagle, like his Prussian descendant, sank his beak into the breast of the world. Roman power, like Prussian power, sprang from the will of the Emperor.

In Greece, in the age of Pericles, the demos was the fountain of power, and the army was the guardian of the freedom of the people. The ideals which inspired the Athenians, honor gained in serving the country, is today the ideal inspiring the soldiers of France.

In analyzing the spirit of the French soldier, bear in mind this vital fact—fighting is an emotional act; and it is admitted that an emotion springing from an ideal is necessarily finer than one founded on a person. The German goes to battle with the Kaiser's sparkling figure in the back of his mind, while the Frenchman fights for all that is connoted in the one word—France.

Frankly, the German honors, reveres, sanctifies war; the Frenchman hates, despises, abhors war. I have seen the soldiers of both nations in battle. I have studied them and talked with them after battle. I have watched for some unconscious expression that would give the clue to the real feelings of the French and German soldier, and when some phrase of the lips or flare of the eye marked the true state of the inward soul, I have noted it.

In countless ways the German shows it is the Kaiser he fights for; that dominant, disdainful figure symbolizes the Teutonic system, inspiring the German race to the ultimate sacrifice in the effort to spread that system over the face of the earth.

Never has the French soldier given any indication other than that he fights for his country, his cities, his farms, his homes. Never does he give way to the lust of battle for battle's sake. He sees in this war an evil, a scourge laying waste his beloved country, and he conceives it to be his duty to his forefathers, himself, and his children to rid the earth of this plague. The cultivated Frenchman will take pains to explain to you how illogical, unintelligent, uncivilized is war; yet you will see this same cultivated Frenchman wearing the uniform of his motherland racing like a fighting fury to the muzzles of the machine-guns.

THE TRUE HERO OF WAR

Will not the man who recognizes the brutal side of war, still does not hesitate to pay its penalty, merit more the title of hero than he who fights to gratify ambition?

The paradox of the French way of thinking about war and acting in war is carried out in the organization of the army. The wide, unbridgable chasm of caste which exists between the officer and the private in the German company is but the step of necessity in French battalions. French soldiers recognize the need for discipline, of the value of team-work, and the urgency of obeying in battle, as the very foundation of their worth as citizen soldiers. They know also that they of their own volition have created the authority behind the officer, and for this reason there can be nothing degrading in the surrender of personal privilege in the crisis of war.

Discipline is not maintained through fear, but by public opinion. Each private soldier recognizes that his individual efficiency and effectiveness, and consequently the efficiency and effectiveness of the whole French army, is based on his prompt and intelligent obedience of orders delivered by military superiors.

He knows that his officers are trained specialists in war, and he puts himself freely in their hands, so that the nation's will in war may be accomplished. He understands the successive limitations of military authority—the private to the sergeant, the sergeant to the lieutenant, the lieutenant to the captain, the captain to the major, and so on through grade after grade, up to General Nivelle, who in turn is responsible to France. With this conception of his duty, the most difficult part of military instruction is readily instilled into the French recruit.

HIGH STANDARDS OF PERFORMANCE

Thoroughly to appreciate the relations of officer to soldier in the French army, they must be seen together in the trenches. The captain watches over his men like a father. He shows a sympathetic understanding of their difficulties, while demanding in the common cause a rigorous adherence to their duties. The officer sets the highest standard of performance for himself and exacts the best each of his men can do.

But the soldier knows he can go to his officer with his private troubles and receive helpful advice. He knows he will never meet with intentional injustice. And what gives him supreme confidence is the knowledge that he will be led with intelligence and skill.

The French officer is constantly alert to take advantage of the enemy and safeguard his own men. The greatest crime

Photograph by American Press Association

WEARING GAS MASKS AT THE BENCHES

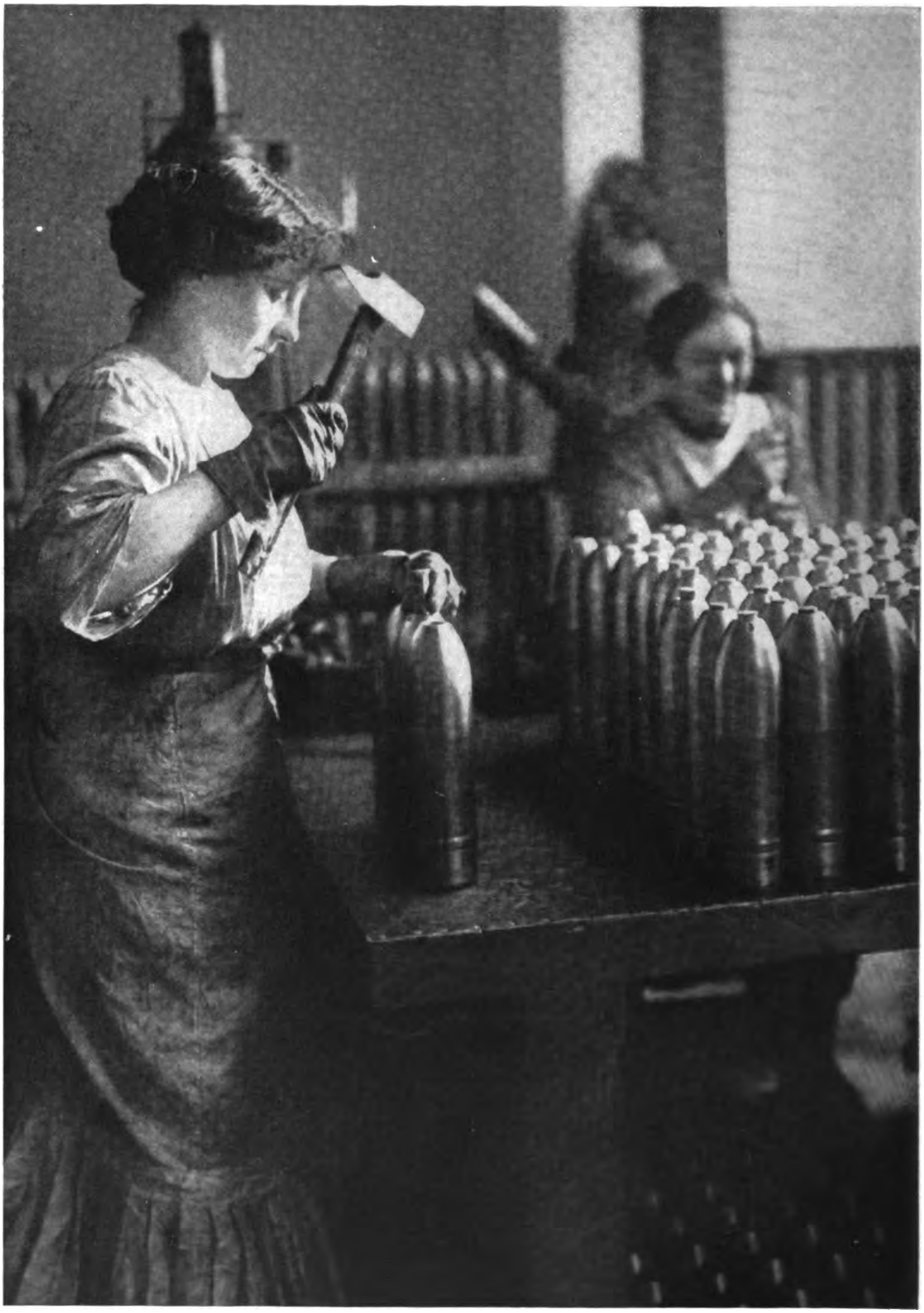
It is not alone in the trench that the soldier must guard against poisonous gas and dust. These women soldiers of the munitions plants must be similarly protected.

in the officer's calendar is wantonly to waste the life of a subordinate. Circumstances may call for the last sacrifice at times, but short of this condition the French commander husbands the lives of his men as a miser his pieces of gold. In an attack he will plan how they must creep from shell-hole to shell-hole, keeping as safe as possible from the enemy's artillery fire. He will study the ground in front of his trench for every available bit of cover, and so maneuver his men that they will gain its every advantage. He will elaborate trench and sap until his men are as safe as the battle front permits, feeling his duty to his country demands not only that he defeat the enemy, but that he defeat him with the minimum expenditure of the lives under his command.

Men learn quickly to appreciate this quality in their officers, and this appreciation brings about a sense of loyalty which closely knits an army into an unbeatable whole.

THE TEST OF THE TRENCHES

The test of the trenches also brings out the indomitable spirit of France as could no other circumstance. I saw this spirit in its concrete cheerfulness during a visit to the battle line beyond the Somme.



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FRENCH WOMEN WORKING IN AMMUNITION FACTORIES

Mythology relates that Jupiter, as a reward for the excellence of the thunderbolts forged by his crippled son, Vulcan, bestowed upon him the hand of the fairest of the immortals—Venus. The daughters of France have inherited their beauty from the Cytherean goddess and their skill in making modern thunderbolts of battle from the Olympian blacksmith.

Photograph by Paul Thompson

WOMEN ENGAGED IN RESEARCH WORK FOR THE BENEFIT OF FRENCH SOLDIERS

This war has given women their opportunity, which they have not been slow to seize upon; but in no sphere of usefulness has this been more pronounced than in Red Cross work. Here nurses are seen engaged in research work to benefit the particular cases they have in hand.

It had rained for two weeks and it still rained. The battle ground, a great patch of black, desolate earth, looked as if for an age it had been submerged beneath the slimy waters of some flood. Gaunt and murky tree stumps marked the residue of woodlands. A thousand shell pits pocked the ground. Into these drained the top soil of the earth in flux.

The Germans kept up a sullen shelling of the French trenches, zigzagging across these fields of desolation. Depression hung like a lowering cloud over the scene. Yet as I passed along the communication trenches I heard a voice in blithe song issuing from the depths of a dug-out. A sodden rain was falling, adding the last dismal touch to conditions, yet the singer chanted gaily:

"Elle a perdu son parapluie, tant pis pour elle."

In a moment a mud-spattered soldier appeared from the dark of the cave.

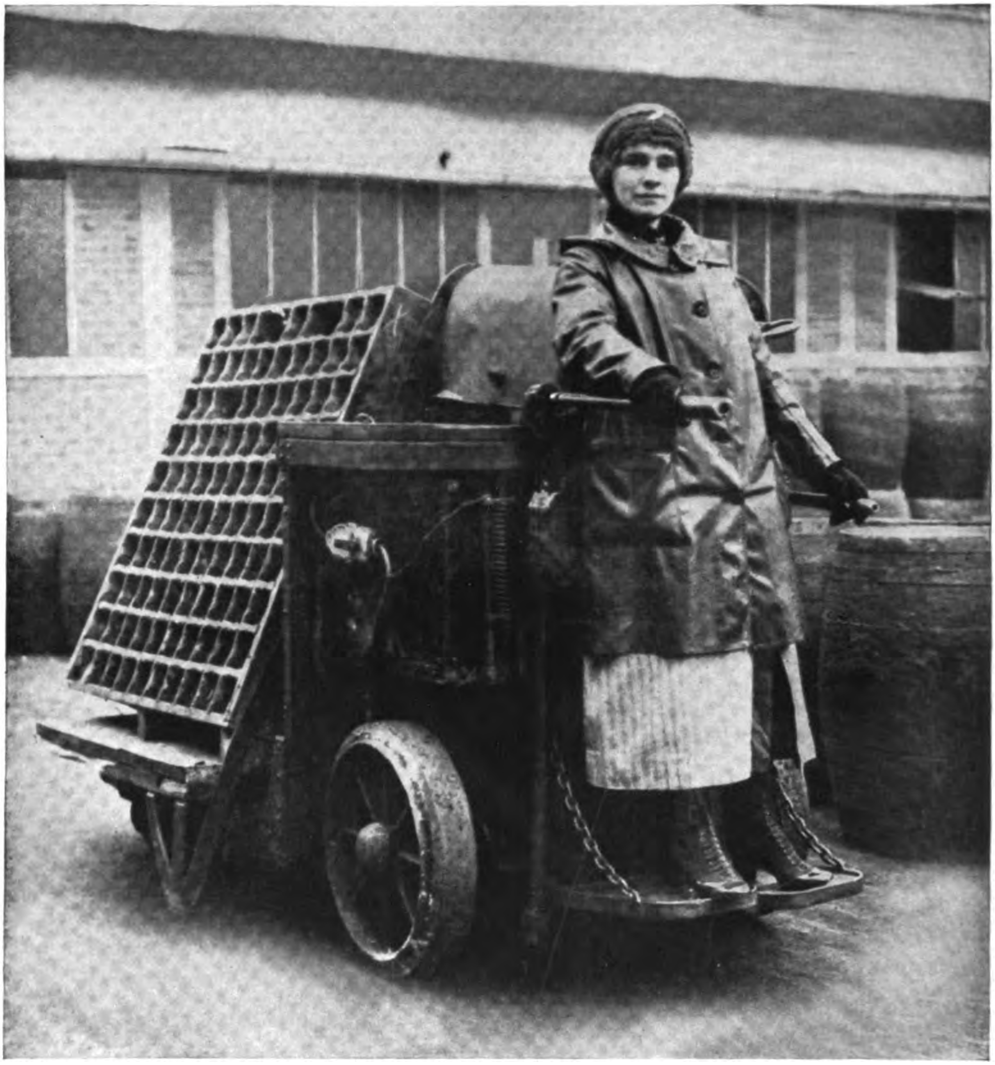
"Good morning," he said, cheerily throwing the carcasses of two huge rats over the parapet. "There goes the night hunting."

The cheerfulness of this soldier personified the spirit of France.

WAR'S AWFUL COST TO FRANCE

In the proportion to her population, France has given more of her citizens to battle than any other nation. It would be valuable information to the enemy to give the exact figures of losses, so the French general staff publishes no record of the cost of victory. But from a study of such data as is available an estimate can be made. Counting the dead, the permanently disabled, and the prisoners, France's contribution to the holocaust of war is more than two millions.

The price France pays in flesh and blood is a greater sacrifice than has been yet demanded from any of the allied nations. In computing the value of this sacrifice, all the conditions of French population must be taken into account. Chief among these must be placed the ab-



Photograph by American Press Association

THE FAIR CHAUFFEUSE OF A SHELL SEDAN

This is the type of electric cart used in the munitions factories for the transportation of shells. It requires a steady hand and a sure eye to pilot this machine when it is laden with a cargo of canned death.

normally low annual increase in the number of French citizens. Taking only the figures for native-born Americans during the last forty years, and the increase in population in the United States has been over thirty millions, while during the same period in France the increase has been less than three millions.

If the loss continues at the same rate, in another year France will lose the total surplus in citizens she has gained since the war of 1870. And it must be remembered that the death lists today are not compiled from the aged and sickly, but from the youth and health of the land.

Through the sacrifices in men lost during the early battles of the war France was able to check the German rush and gain time for England to prepare. The French army met the German army at its full strength and defeated it. The victory of the Marne was due to the tactics employed and the blows struck by the French army. When the facts are finally revealed, history will grant France this honor. But it is an honor paid for in the best blood of the country.

Up to the present it has been the French army, the French citizen soldier, who has saved the world from German conquest.

A SPARTAN MOTHER AND WIFE

As an example of what France gives, let me quote the story of General Castleneau. He is a valiant, generous gentleman—a soldier with the soul of a Spartan.

He and his sons were among the first to draw their sabers in defense of their land. During the first year of the war, when he was pressed down with the cares of one of the most important commands in the French army, news was brought to General Castleneau, first, that one of his sons had been killed; then in a few months a second died for his country.

The third son fought in the army commanded by his father. He was his father's favorite. Little more than a boy, in the first battles he had shown a courage that won him honor and rapid promotion. Then in one of those attacks, where regiment upon regiment charged through the fields of death, this third son was mortally wounded.

Upon the death of this boy, broken by his sorrows and the strain of war, General Castleneau thought to give up his high command and live out his last days on his home farm. Then his wife came to him. He told her his thought.

"No," said this French wife and mother, "you have given the best of yourself to your country. You have nothing left to give save these last years. We must keep up the fight." General Castleneau today is still at his post of duty.

RESOURCEFUL FRANCE MEETS NEW CONDITIONS

Not only has France given the bodies of her sons in the sacrifice of battle, but she has also given the fruits of their brains. The trained professional officers of the French army have been the intelligence which directed the military operations of the Entente armies. These officers were instructors in the art of war to the allied forces, and while acting in this capacity they evolved new tactics which so effectively thwarted German ambitions.

The new tactics were the outcome of trench warfare, which had brought into use weapons long since discarded in modern armies. When the war opened French battalions, a thousand strong, had the organization common to most armies, namely, four companies and a mitrailleuse section of two guns. The men were armed wholly with rifle and bayonet; but French ingenuity was quick to see the changes of organization and armament made necessary by the new warfare.

Today half the battalion have discarded the rifle and carry grenades or one-man machine-guns. Three of the original companies are still infantry, while the fourth has been changed to a machine-gun company with eight mitrailleuses.

The infantry companies are subdivided into sections and armed with special weapons: first, the hand-grenade throwers; second, the rifle grenade soldiers, who, instead of throwing the grenade, fire it from their guns; third, the soldiers firing automatic rifles, and these are followed by the ordinary infantry, using rifle or bayonet.

The machine-guns as employed by the Germans were the great bugbear of the trenches. These weapons would mow down a whole company of advancing soldiers in the charge. French officers set themselves to solving this problem and devised the small cannon to be used in the assault. The gun, 1½-inch caliber rapid fire, was dragged forward with the charging line. When brought into action it soon mastered the fire of any hidden machine-gun.

THE WORK OF THE RIFLE GRENADE

That ingenious weapon, the rifle grenade, merits special citation. It consists of an iron receptacle, clamped to the end of the regular rifle, in which a special type of grenade is placed, and the rifle fired. The explosion sends the grenade about 200 yards through the air, while the rifle bullet, piercing the center of the bomb, sets free the fulminate, which causes the grenade to explode on landing.

I have no intention of going into a

technical discussion of the French infantry in attack, and only give the outline of tactical changes in order to indicate how the French people are fighting with their intellects. They have no belief in brute force in war; if they had, they long ago would have surrendered to the Germans. Their faith is pinned to their own finesse—a finesse which exasperates and thwarts the enemy.

As instructors, French officers have been of inestimable value to the English. In the beginning of the war the British army was deficient in artillery—a deficiency which was rapidly remedied in material, for England turned out guns for the army from the naval-gun foundries. But gunners, who are soldier specialists, were not available for the batteries.

In this dilemma England turned to France, the country that had developed the finest corps of artillerists the world has ever seen. French officers were detailed to the English batteries, and English officers also were taken into French artillery units and learned their art in the actual practice of war under the tutelage of the most competent teachers.

I have referred to French artillerists as the finest in the world. The statement is made without qualification; and were I seeking the factor of greatest single importance in the military strength of France, I should decide upon the artillery.

A HUMAN MACHINE IN ACTION

It was given me to see the French guns go into action in one of the early attacks of the war—the engagement at Dinant. Aside from its spectacular interest, the performance was one of the most perfect exhibitions of artillery technique I have ever witnessed. The guns were driven, wheeled, and unlimbered with the precision of parade-ground maneuvers. The men dropped into their appointed places like the parts of a geared machine. Then guns were loaded, aimed, fired, reloaded, without an ounce of lost motion. When the projectiles exploded, and I could see the effect through my binoculars, I wanted to cheer for the gunners of France. They had scored four direct hits.

The guns of this battery were the "soixante quinze" caliber, since become the most famous cannon of the war.

The construction of this cannon was a jealously guarded military secret up until the time of the opening of hostilities. Other nations knew that France possessed a field gun of exceptional properties, and while they had hints of its effectiveness, as demonstrated in peace, it needed the brutal test of war to prove the superiority of this weapon above all similar makes of artillery.

It is readily understood that, with a cannon which shoots farther and faster than the enemy, the French army possessed an asset of great military advantage.

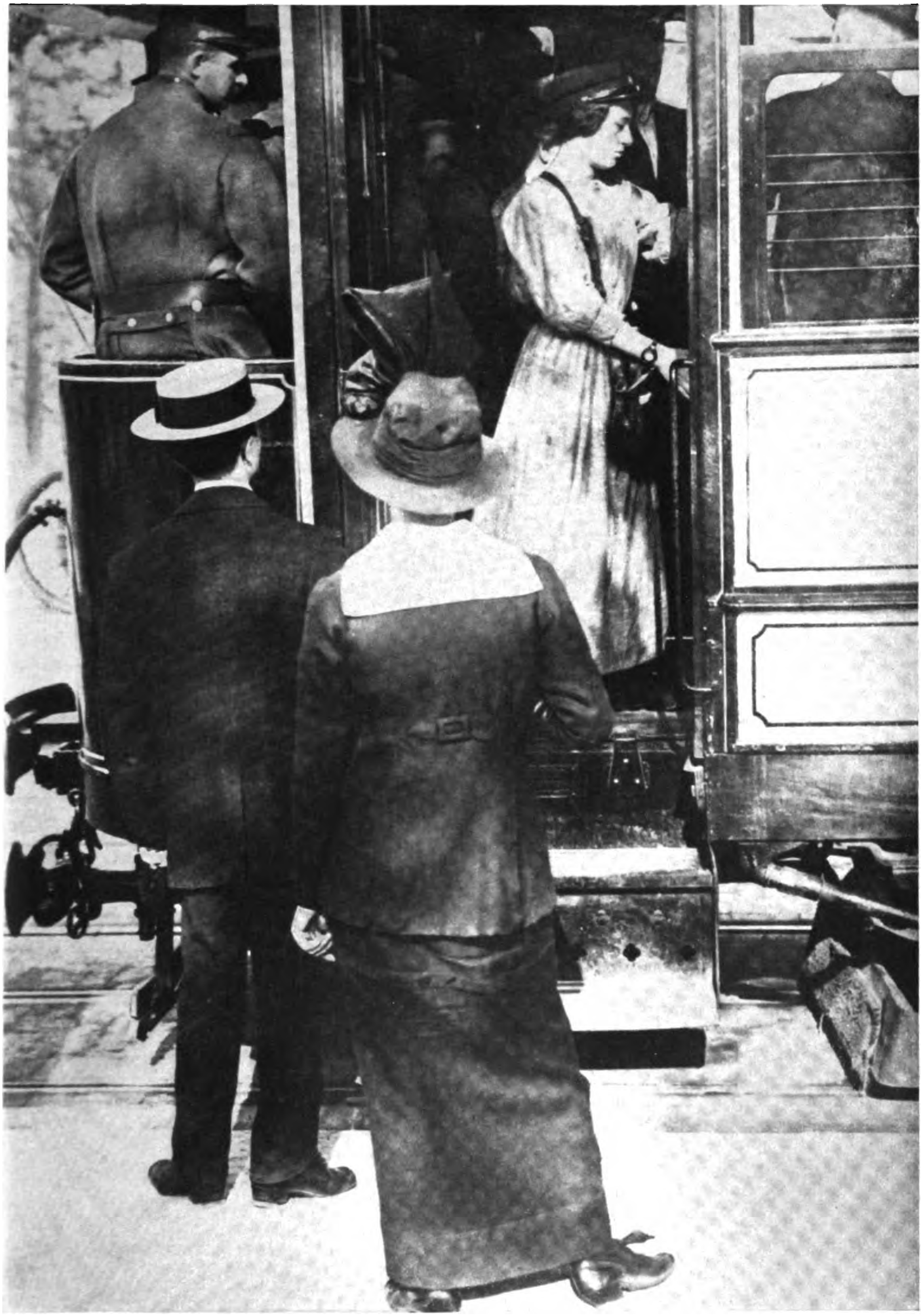
I have heard French artillerymen state that the superiority of their "soixante quinze" batteries made up for the German preponderance of numbers in the beginning of the war, and that the destructiveness of these guns was so great that they almost equalized the tactical value of the forces of France and Germany after several hours of actual fighting.

The gun is a marvel of fitted mechanism; breech-block, recoil cylinders, sighting apparatus, all the puzzling pieces of hardened steel which open and close the cartridge chamber, function with the smoothness of a dynamo.

In the process of loading and firing, it gives the impression of some sentient organism rather than a machine of turned steel. This impression is heightened by the short, dry sound of the explosion when the shell is fired—a sound that awes and electrifies when first heard, and which has come to be far more characteristic of battle than the conventional "boom" supposed to convey the noise of cannon.

GERMANY BEATEN AT THE ARTILLERY GAME

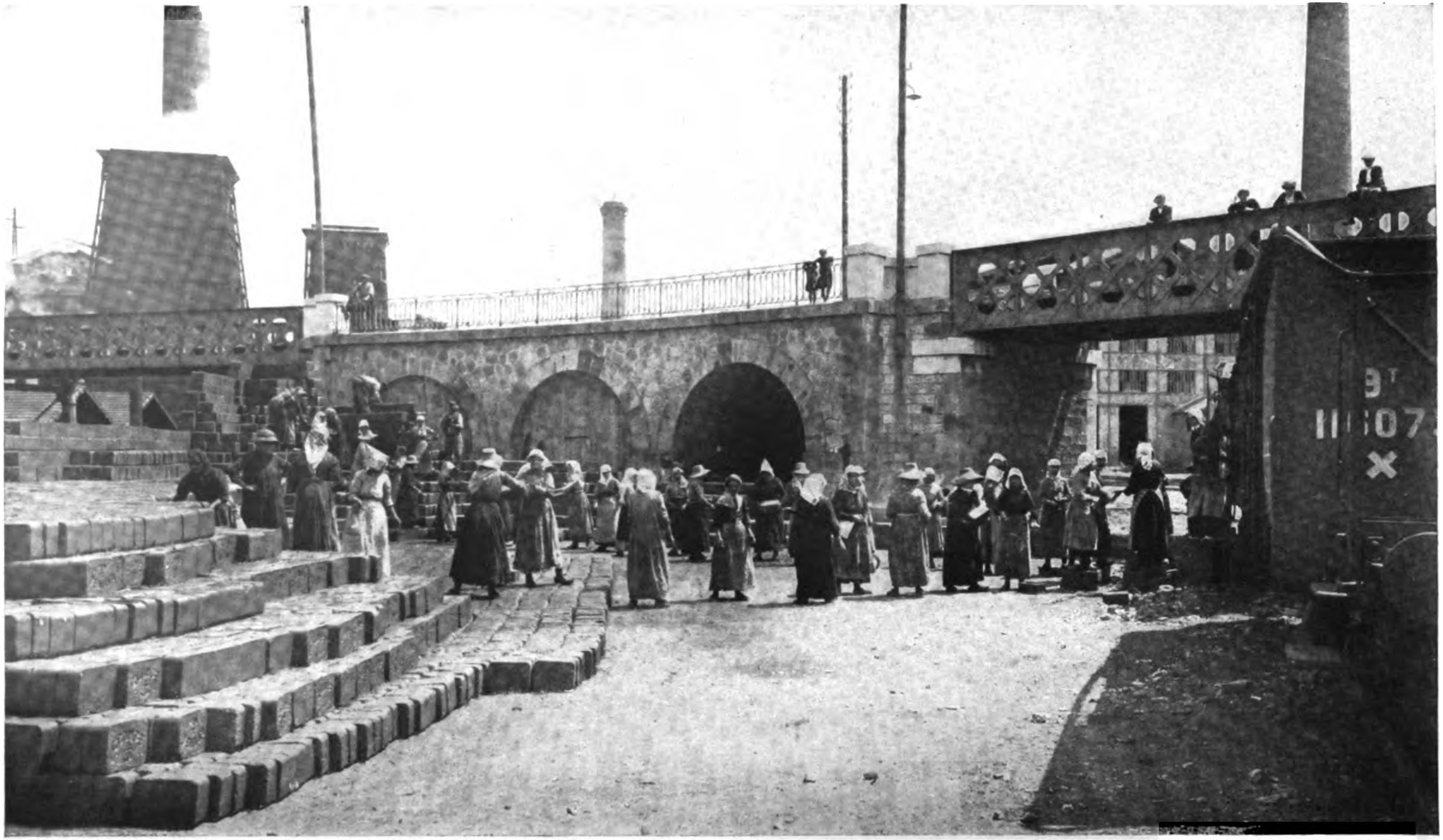
As soon as the superiority of the French cannon was recognized, the great arms factories of France were enlarged and worked to the limit of capacity, not only to furnish new guns for the French army, but also to supply the enormous demands of the Russian army. Later Serbia and Roumania were also supplied with field batteries from French foundries, and in these countries officers and men accom-



Photograph by Paul Thompson

FARES TO THE FAIR

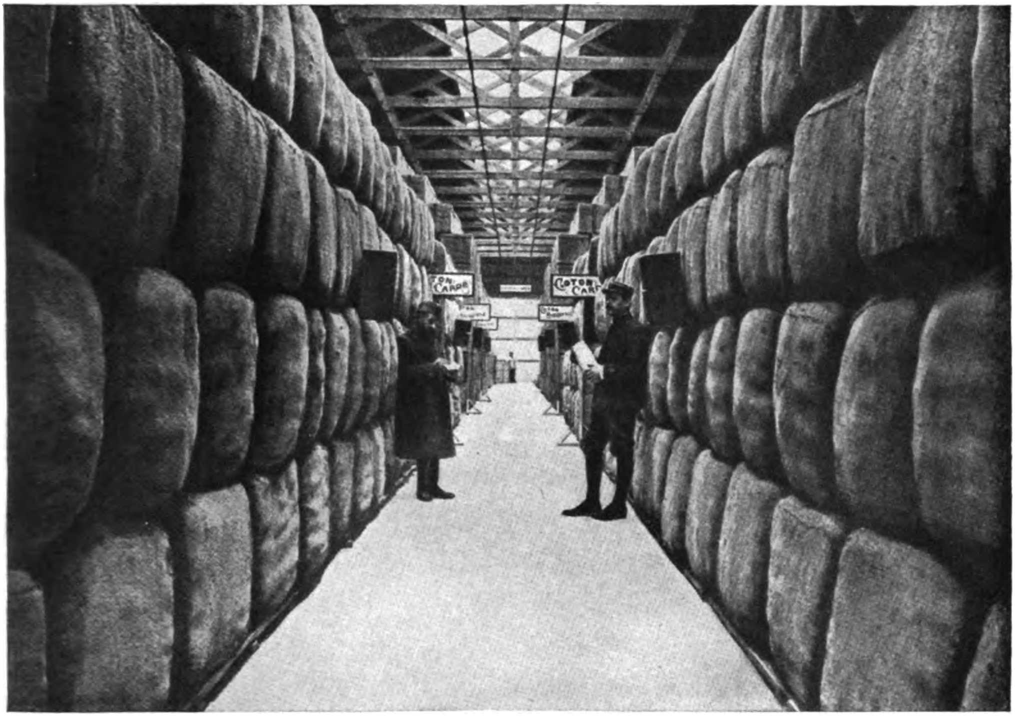
Among the many occupations which the women of France are pursuing, in order that men may be released for service in the army, are those connected with the street railway systems of Paris and other cities. Motorwomen, girl conductors, ticket sellers, and ticket takers are now the rule rather than the exception. Here a young girl is seen wearing the uniform cap of a surface-car conductor. From her shoulders hangs the big leather bag in which she deposits the passengers' sous and centimes.



Photograph by Paul Thompson

WOMEN IN THE COAL MINES OF GARD, A DEPARTMENT OF SOUTHERN FRANCE

It has been due to the unremitting toil of such service armies as this that the fuel shortage in the north of France has not been even more serious than it now is. "If he slackens or fails, armies and statesmen are helpless," said President Wilson in his appeal to the American miner. This has been no less true in France, and the women miners have courageously assumed the vast responsibility. The blocks on the left are "briquettes" of coal.



BORDEAUX-BEGLES: GENERAL WAREHOUSES OF THE HEALTH SERVICE

Like her chief munitions works at Le Creusot, France finds it expedient to keep her principal stores of surgical cottons and health-service supplies far removed from the immediate scenes of hostility. Not only are these warehouses beyond the zone of possible airplane raids, but, being at Bordeaux, they are convenient depots for the receipt of Red Cross shipments from England and America.

panied the guns to insure efficient handling.

From the above it is seen how generously France came to the support of her allies in the most important branch of military science; and when we reflect on the enormous amount of material destroyed during the two and one-half years of war, we begin to perceive what a drain this has been on the resources of France.

Reliance upon the decisive effect of artillery in battle has been a tradition with the French army since the victories of the first Napoleon. He it was who originally employed artillery in a massed formation. At Wagram, at Lutzen, at Hanau, this maneuver of concentrated artillery fire gave the victory to the armies of France. Napoleon III tried to continue the theories of his brilliant ancestor, but failed; yet the influence of the great master of tactics continued; so it is but natural that the use of artillery in war should reach its highest perfection through French development.

The French have relied for success in the fighting today on the ancient maneuver of the Napoleonic era—a mass of guns firing at a given point in the enemy line. At the same time they endeavored to make the practice of concentrated fire more effective through increased speed and accuracy of fire.

THE BIG GUN VS. THE LIGHTER ONE

Before the opening of the great war there were two schools of artillery tactics—the French, which believed in the above theory of rapid field-gun shelling, and the German, which pinned its faith to the effectiveness of huge guns having a greater range than the ordinary field gun and of course throwing a far more destructive exploding charge. The extreme of the German theory was the widely advertised 42-centimeter cannon, supposed to be able to reduce the strong-

Photograph from Paul Thompson

BOUND FOR PARIS

A French Red Cross train bearing sick and wounded soldiers to Paris after passing through a field hospital. One of the nurses is making a tour of the train, distributing coffee to the slightly wounded and sick men.

est fortress to ruin with three well-directed shots.

The actual practice of war and the peculiarities of trench fighting developed the fact that neither of these schools was wholly right. The light French guns were ineffective against troops hidden in well-constructed trenches, while the difficulties of transportation involved in moving the giant German guns from point to point outbalanced their ultimate effectiveness.

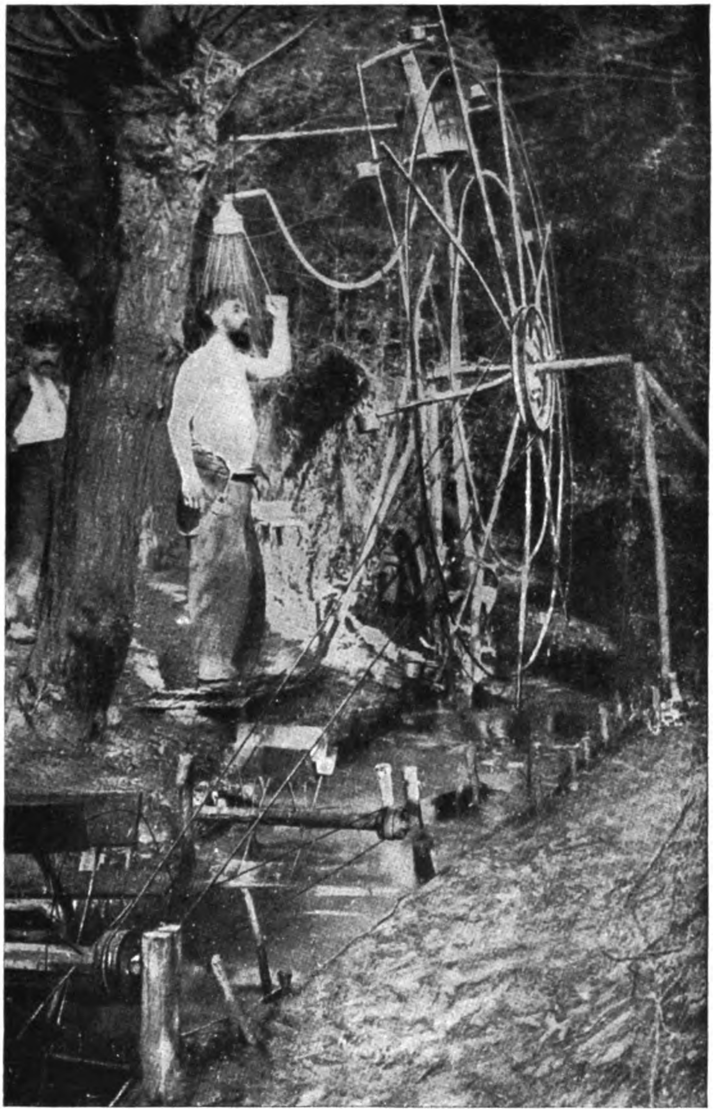
French artillery experts began at once to experiment toward developing the most serviceable gun under actual conditions of war, and the result of this experiment can be gauged by the different caliber of cannon now used in the French army. Here is the list given in meters and the approximate caliber in inches:

First the 75 millimeter, the standard field gun, 3-inch caliber; the 95 millimeter, 3½ inch; 305 millimeter, 12 inch; 370 millimeter, 15 inch; 400 millimeter, 16 inch, and last the largest cannon in the world, 520 millimeter, or 20 inches.

I give the list in full to impress upon my reader the extraordinary complication of industry involved in the casting, turning, and assembling of these various types of cannon. Special machinery must be employed in each instance where there is a variation in caliber. Complete foundries are given over to the manufacture of the separate parts of the gun and gun carriage. The industrial organization for one size of gun alone is greater today than the total pre-war ordnance organization.

THE 20-INCH CANNON OF FRANCE

From the failures of the Germans the French found that the problem of heavy artillery in the field was transportation; so French artillery experts began at once to try to solve this difficulty. They have succeeded in their task. Their triumph is the construction of a railroad truck upon which is mounted a 20-inch cannon, the heaviest piece of artillery in the world.



THE SHOWER BATH

Judging by this contraption, the French soldier has developed a modicum of Yankee ingenuity. A water-wheel motor operates a hydraulic lift, which supplies a bucket reservoir with the "makings" of a sprinkle. The apparatus works, but it looks as if it might have been modeled after a comic cartoonist's distorted dream.

The marvelous manner in which the French have overcome the mechanical difficulties that hitherto confined heavy artillery to fortress or siege operations is a striking example of what French brains are doing in this war. Firing a 12-inch gun from a foundation built along a spur of railway was considered a mechanical impossibility before General Joffre's expert artillerists demonstrated the success of the idea.

It was not only in the construction of these guns that France showed her skill, but in their operation. French gunners first developed indirect fire—the art of hitting an unseen target—and in this war they have brought indirect fire to technical perfection and even applied its principles in new ways.

Undoubtedly, in accounts of present-day battles in Europe, the reader has met the phrase curtain or barrage fire. He may have guessed something of the nature of this artillery expedient.

Photograph by Paul Thompson

ISSUING A FOOD TICKET TO TOMMY ATKINS

The offices of the Gare du Nord, Paris, have been converted to the uses of organizations for the relief of suffering among the refugees and victims of the war. A British soldier is seen accepting an order for a meal.

The phrase means, in untechnical language, the art of aiming a mass of cannon in a manner that the projectiles from all of them fall in a given area in such a shower as to form a curtain or barrage of exploding iron.

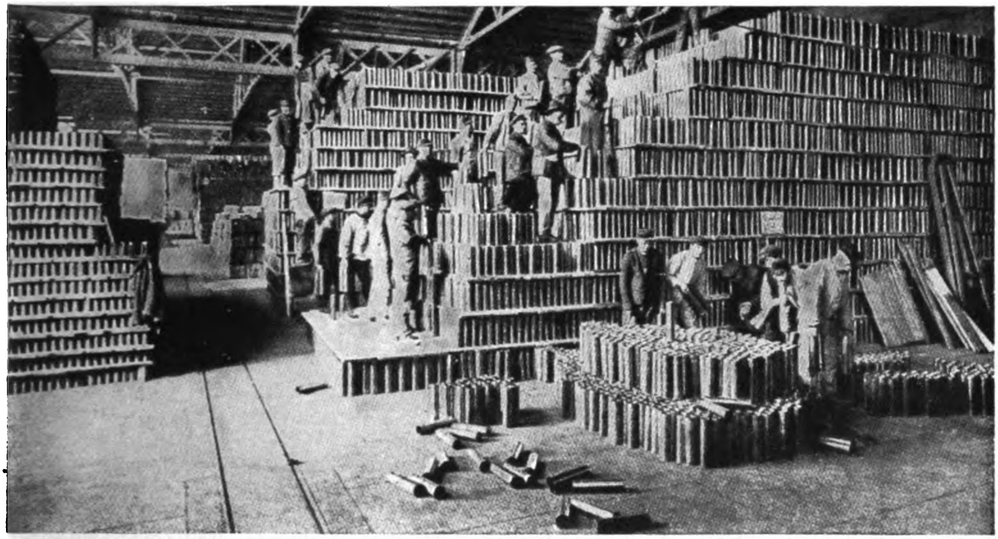
This curtain may be dropped behind an enemy position so that reinforcements cannot come to his aid when attacked, or it may be used to check an advance.

THE SYNCHRONIZED FIRE OF 400 GUNS

Accurately to synchronize the action of 50 or 100 batteries, 200 or 400 guns, so that while firing from widely separated positions at a target that is not in view the projectiles arrive simultaneously along a defined and predetermined line, is a matter of the highest technical skill and calculation. To the French belongs the honor of first employing this effective artillery principle.

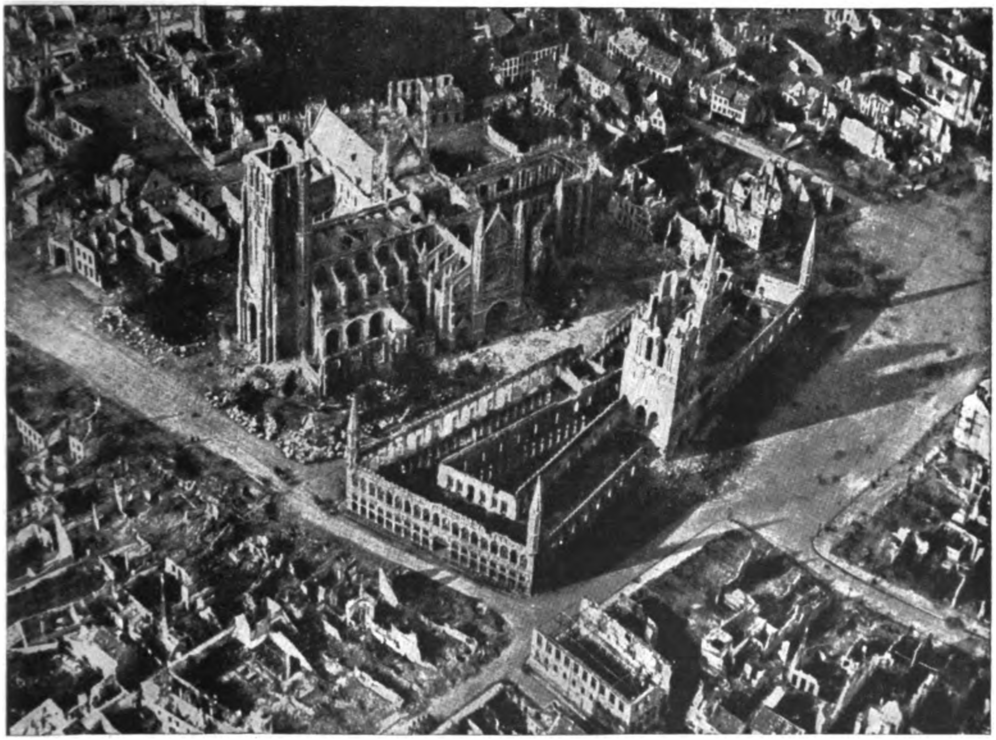
I have seen these great pieces of ordnance, equal in size to the major guns of a battleship, moving from point to point along specially built lines of lateral railroads, running in rear of the trench position on the Somme. At the will of the commander they are brought into action wherever the press of battle warrants.

This development and operation of artillery is the most impressive manifestation of the colossal expansion of modern war. Consider the tons of metal molded into each of these great cannon, and then reflect that wherever the trucks upon



PILING UP SHELL CASES FOR 75-MILLIMETER GUNS

"The French 'soixante-quinze' gun is a marvel of fitted mechanism. In the process of loading and firing it gives the impression of some sentient organism rather than a machine of turned steel. This impression is heightened by the short, dry sound of the explosion when the shell is fired—a sound that awes and electrifies."



VIEW OF YPRES: PHOTOGRAPH TAKEN FROM A FLYING MACHINE

The pitiful ghost of one of ravaged Belgium's most beautiful and historic cities. In the central foreground may be seen the roofless remains of the famous Cloth Hall, the largest edifice of its kind in the kingdom, begun by Count Baldwin IX of Flanders in the year 1200. Just beyond looms the scarred and desecrated Cathedral of St. Martin. On all sides are ruin and desolation, where three summers ago dwelt nearly 20,000 happy, thrifty people, engaged chiefly in the peaceful pursuit of making Valenciennes lace.

RESERVES CROSSING A RIVER ON THE WAY TO VERDUN

"They shall not pass" is a phrase which for all time will be associated with the heroic defense of Verdun. To future generations of French people it will bring a thrill of pride even surpassing that enkindled by the glorious "The Old Guard dies, it never surrenders." The guardians of the great fortress on the Meuse have proved themselves invincible in attack, invulnerable in defense.

which they are mounted move, bridges, culverts, even the road-bed itself, of the railroad line must be strengthened to support the load.

Further, in order that the giant cannon shall have the mobility for effective use, new sections of railroad must be built whenever the army advances.

If you analyze the process of manufacture and the details of transportation involved in the creating and bringing of each one of the new heavy field guns to the front, you arrive at an understanding of the important part played in the war by the French industrial organizations.

A WONDERFUL PRODUCTION OF SHELLS

I was witness to another phase of the effectiveness of this organization, as shown in the munition industry in France. Taking the number of units produced daily as a standard, the greatest single business of the war is the making of shells. This comes about through the enormous disproportion in the time consumed in the production and the distribution of shells compared with the time needed to expend them.

Consider the making and the breaking of the shell. One is a tedious, toilsome, exacting, and complicated process, beginning with the digging of iron ore from the earth, its transportation to steel mills, its transfusion and casting into ingots.

These ingots are the raw material of the shell casing only. The production of the explosive that serves as the bursting charge is an industry in itself, while the construction of the mechanism of the fuses requires almost as much skill as watch-making.

In the first year of the war, the critical period of the conflict, France led all the Entente nations in the production of shells. As was the case with guns, France had to supply her ally, Russia, with the munitions so necessary to the effectiveness of the armies fighting in Poland and

Photograph by Paul Thompson

A WAGON-LOAD OF HELMETS OR CASQUES FOR FRENCH SOLDIERS LEAVING THE FACTORY

At the outbreak of the world war the French fighting man wore a long-visored, tall-crowned cap, but this picturesque headgear soon yielded to the utility of the metal head-piece, which furnishes a certain degree of protection from the shrapnel that bursts above the trenches and sows the seeds of destruction in the furrows of death.

the Carpathians. To meet this drain the industries of the country were reorganized. The products of peace gave way before the demands of war.

The concrete example of this is the transformation of the plants of the Renault automobile works to the making of munitions. In one factory, formerly wholly concerned with the forging and fitting of motor machinery, 15,000 men and 4,000 women are now employed 24 hours of each day grinding and filling high-explosive shells. The work, divided into shifts, never halts, and from this one plant 11,000 projectiles are daily sent forward to the front.

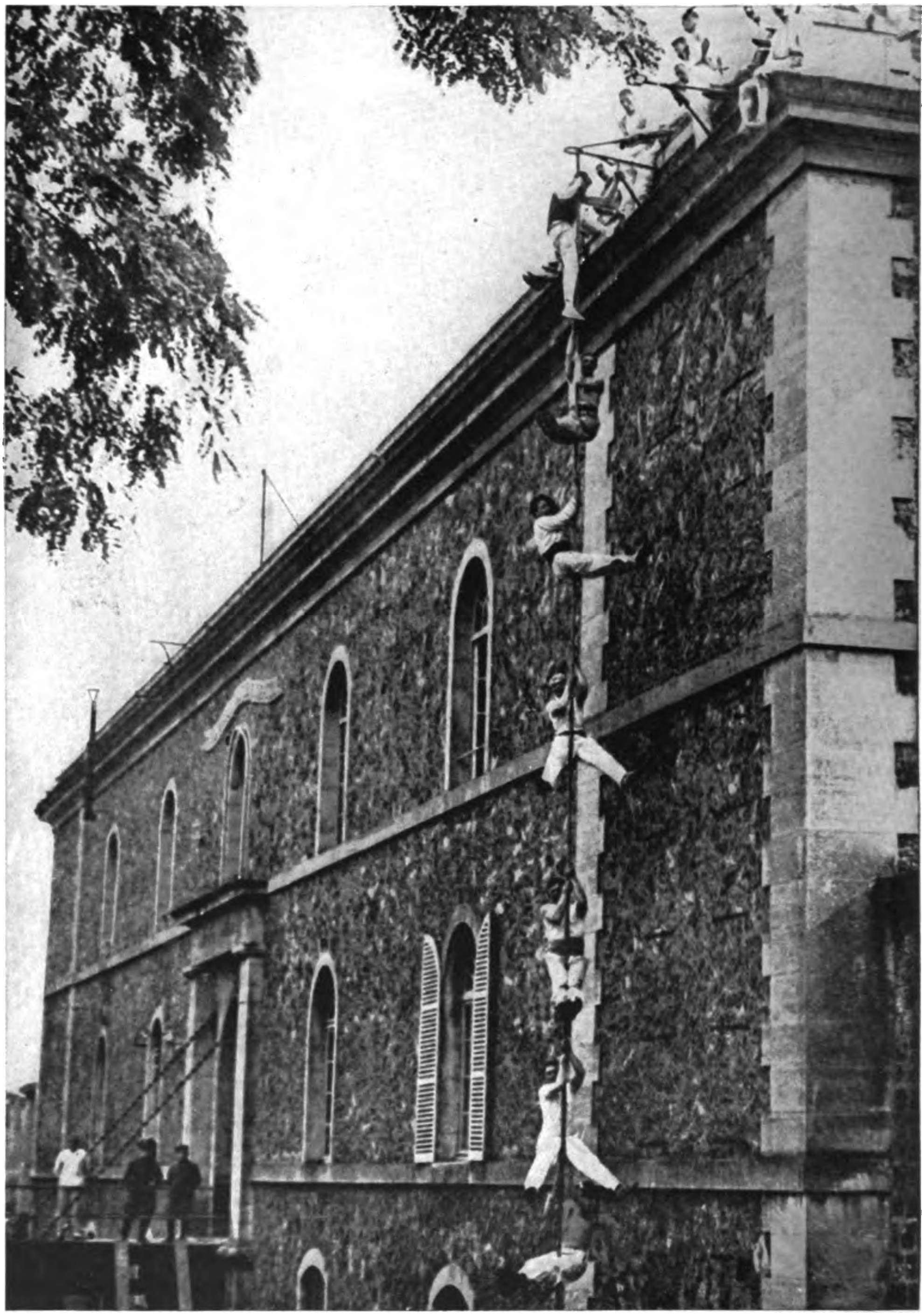
THE VASTNESS OF THE EXPENDITURE OF STEEL

But during periods of heavy fighting, when the cannon is playing its important part in the tragedy of battle, the calculated average expenditure of ammunition by one army corps is 29,000 shells per day. So the total effort of 19,000 workers employed during 24 hours furnishes somewhat more than one-third the ammunition used by a small part of the army.

The number of army corps holding the front in France is a military secret, and as the United States is now ranged on the side of France in the war, it would be injudicious to try and probe that secret. We violate no confidence when we state that it is more than thirty. This figure will give us a basis for calculating the number of shells produced by the munitions factories of France.

There are long periods when the expenditure of ammunition in no way approximates the figures given above, and it is during these periods when the guns are comparatively silent that production catches up with consumption.

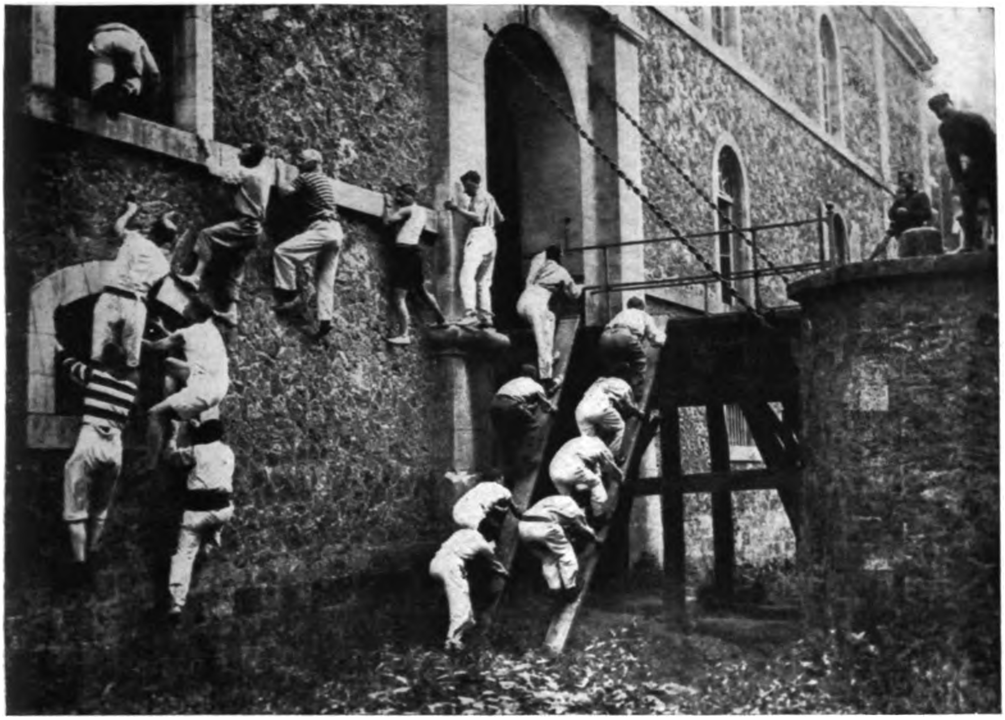
It may be true that England is grad-



Photograph by Paul Thompson

HEAVY TRAINING FOR FRENCH SOLDIERS

The making of men taken from civilian life into well-trained soldiers has been a problem in England as in France. Business hours left the Frenchman with little time for exercise. Their training in the manner here shown quickly made them fit, and soon after leaving the counter, lathe, or desk they have proved themselves able to undertake with endurance the long marches and successful offensives against the common enemy with complete success. Every Frenchman entering the army undergoes a preparation in gymnastics as here shown, where men of the new armies are being made fit at the Physical Training School near Vincennes.



Photograph by Paul Thompson

HOW TO TAKE A BUILDING BY STORM: A LESSON AT THE PHYSICAL TRAINING SCHOOL OF VINCENNES

Although there have been innumerable new engines of destruction employed in the present world war, such as the submarine, the airplane, and the high-explosive shell, the fighting forces of Europe have also hied back to ancient and medieval principles of warfare with astonishing frequency. For example, we have seen the recrudescence of the "Greek fire" idea in "liquid fire," the evolution of the Chinese stinkpot in the new poisonous gas, the reappearance of the armored knight in the soldier wearing a steel helmet, and the glorification of the battering ram in the lumbering new "tank." As shown in the above illustration, the modern soldier is trained to scale walls, just as were the soldiers of Darius the Great, Alexander the Great, Alfred the Great, and Charlemagne. There are variations, but no new principles, in the crude art of destroying human life.

ually approaching France, both in the manufacture of heavy guns and the production of munitions; but this condition appears after two and a half years of war. During those two and a half years it was the French cannon, French shells, French soldiers, and Franch brains that checked the military ambitions of Germany.

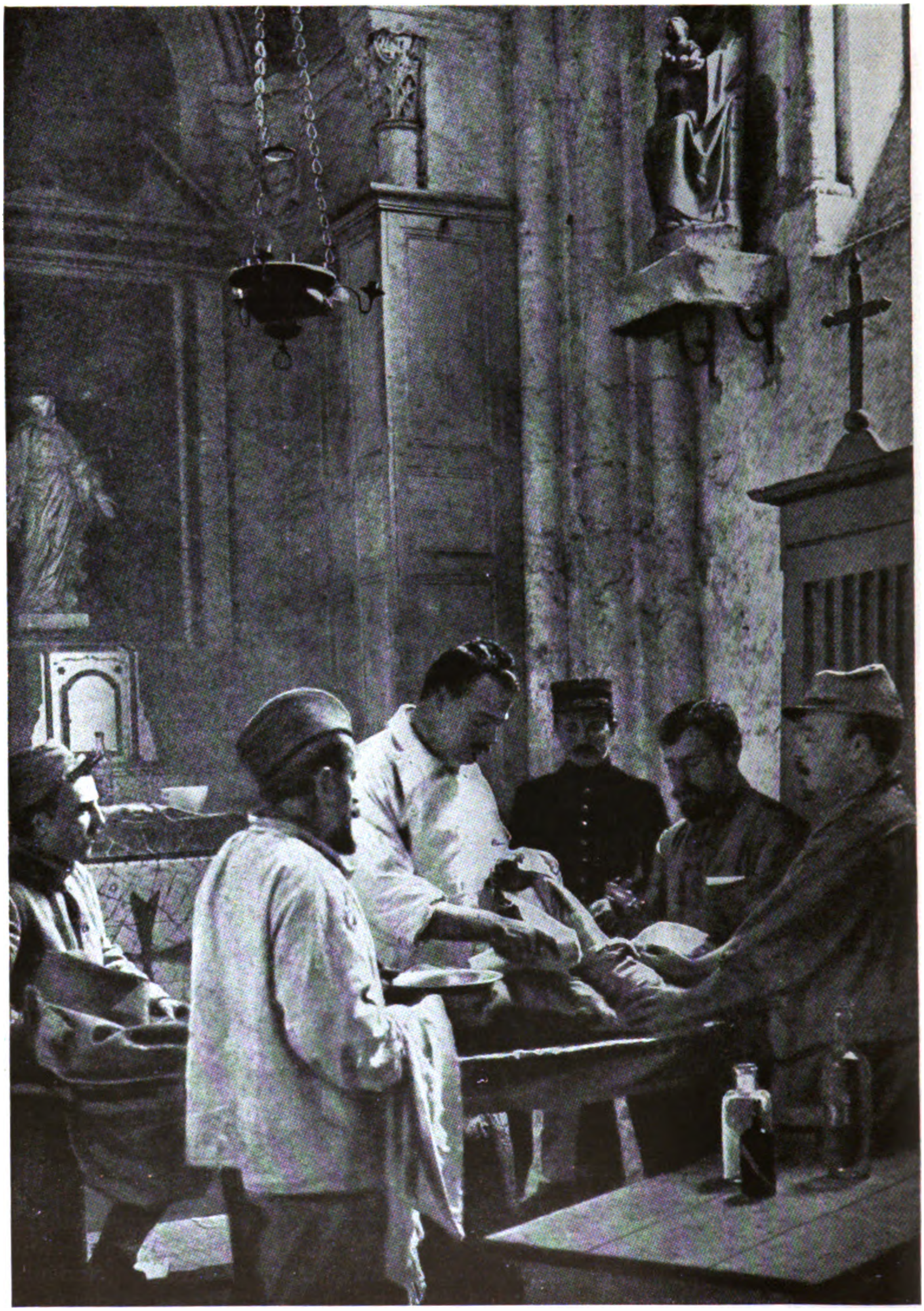
NEW MIRACLES OF SURGERY

With all this effort applied to improve her killing power, France did not neglect the complement of war destruction—healing. The best surgical and medical minds of the country pondered long on the problem of saving all that was possible from the human wreckage of war.

The fruit of this thought is exemplified in the work of Doctor Carrel, whose achievements under the Rockefeller Foundation are well known in the United States, and Doctor Dakin.

These two men put all their efforts into curing the evil of infection. They had found in their work among the wounded that 75 per cent of deaths, after the first 24 hours, were due to infection; that 80 per cent of amputations were due to infection, and that 95 per cent of secondary hemorrhage came through infection.

While the work incidental to healing the wounded was going on, Doctors Carrel and Dakin established a research laboratory in conjunction with their military hospital at Compeigne.



A CHURCH CONVERTED INTO AN EMERGENCY HOSPITAL: THE OPERATING TABLE

"With so much of its skill and thought applied to the development and perfection of her killing power, France has not neglected the complement of war destruction—healing. The best surgical and medical minds of the country have wrestled with and mastered the problem of saving all that is possible from the human wreckage of modern battle."

HOSPITAL UNPREPAREDNESS: AN OBJECT-LESSON FOR AMERICA

In the early days of the war, before the French Red Cross had fully organized its resources, it frequently happened that straw strewn upon marble flags was the only makeshift for beds which could be provided for the wounded. This straw proved most unfortunate for the wounded, as it was often infected with tetanus germs. Here, beneath the altar of their faith, in the Church of Aubigny, converted into a hospital, the fighting men of France reconsecrated their lives to the cause.

It is not necessary to give the details of the experiments of these two scientists. Today, by the application of the Carrel-Dakin method of sterilizing wounds, one amputation is performed where formerly twenty were necessary, and where there were ten deaths one now occurs, and the time of convalescence is reduced from three to six months to four or, at the most, six weeks.

It has been found that the method of Doctor Carrel applied to the formula of Doctor Dakin has not only shortened convalescence, but in consequence reduced the strain on doctors and nurses and the cost of hospital maintenance; also it has minimized pain. But more than all this, it has resulted in a great saving of limbs and lives to France.

THE HEROISM OF THE FRENCH WOMEN

Turning from the purely military side of war to the economic side, we find another picture of French sacrifice. In this picture the French woman holds the foreground.

In the time of war every physically fit male in France can be called upon to shoulder rifle and fight the battles of his country. When this call sounds, it might be thought that the agricultural and industrial structure of the nation would be reduced to chaos.

But for the sturdy heroism of the women of France such might have been the case. When the men were called to the colors, the women came forward to fill the gaps in the farming and manufacturing armies.

French women, aided by their children, plowed the fields, sowed the seed, harvested the crops that during two years have fed the soldiers of France. French women tended the vines, gathered the grapes, and pressed the wine which France exports throughout the world.

French women became conductors, motor operators, ticket-sellers on the subways of Paris; they took the positions vacated by men in the post-office department; they were employed in the street-cleaning and other municipal departments.

In all industries, public or private, women replaced the men called to the front, and, what is much more to the point, they made good in their new work.

UNREMITTING TOIL FOR A FREE FRANCE

As farmers, as vintners, as laborers, as munition workers, French women toil without ceasing to save France and take some of the burden of war from the shoulders of the men. In their own field, as housewives who understand the importance of thrift, they have saved the economic situation.

The enormous financial burden which war has so unjustly thrown on France has been lightened by the thousand economies put into practice by French women in their homes. All the little dainties of table, the little coquetries of dress, the little temptations of amusement, have been sternly put aside for the duration of the war.

Sugar means money spent abroad; therefore the French woman gives up pastries, sweets, and reduces the amount of sugar used in the household. Coal is needed to keep the munition factories up to the maximum of production, so the French woman reduces the amount of gas and electricity used in her home, as these are the products of coal.

Thus French women, through practicing direct and indirect economies, actually reduce the cost of the war to France; and, more than this, when any money is saved to them from these economies they invest the saving in government war loan, making every copper do double work in the defense of the country.

In this article I have outlined what France has done in the war. I have mentioned the work of the army which met and turned the heaviest blows the military power of Germany could muster. I have mentioned how the artillery, the product of French brains, bulwarked the efforts of the soldiers. I have referred to the work of the women of France and their splendid stand under the strain of war, and I have mentioned the spirit of France.

AN UNCONQUERABLE SPIRIT

In conclusion, I must again allude to that spirit. French men and women know that the resources of their nation in property and lives are being consumed in the furnace of war. They know what the death of their soldiers means to the nation in the future. They realize the terrible consequences of German occupation. Yet in the face of all these bitter trials the people have never faltered.

Throughout the misery, the suffering, the brutal injustice of this war, France has fought valiantly for one ideal—the ideal upon which that nation and our own is founded—the right of the citizen to liberty.

Each day as the French armies press the enemy back from the territory so long occupied, the sacrifices of France are proved with greater poignancy.

The band of blackened land now given over to desolation is the visual testimony of what the war has meant to France. But it is not only the losses of today, but what those losses mean in the future, that must be reckoned as part of the burden France bears. This is a sacrifice no man can gauge.

When democracy rises triumphant from the struggle with despotism, and when the last page of war history is written, the world will gladly acknowledge its debt to France.

* * *

THE CALL TO THE COLORS

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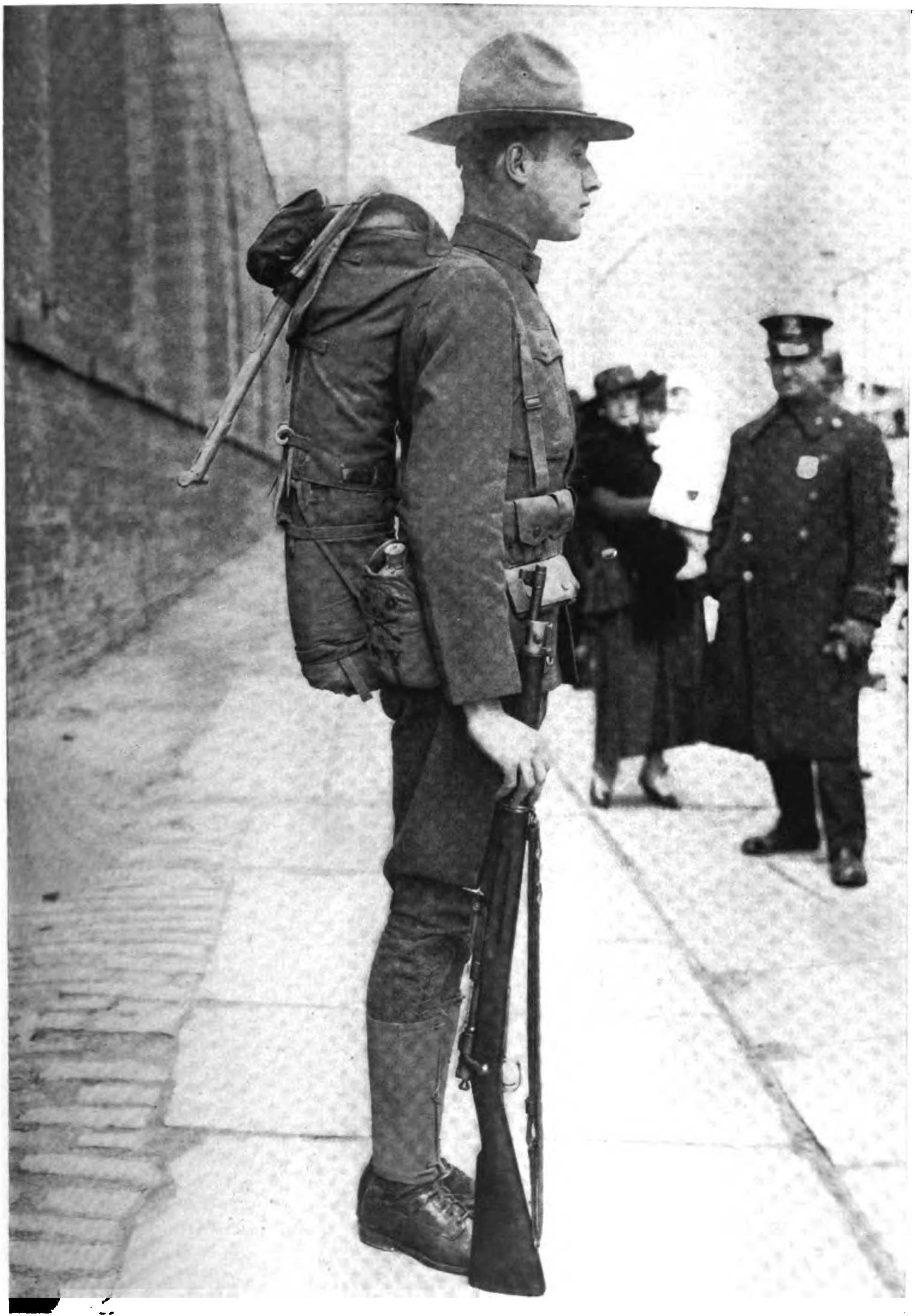
500 NEWLY MADE BLUEJACKETS OF THE U. S. NAVY READY FOR ACTIVE SERVICE

Having completed the necessary course of instruction at the Naval Training Station, Newport, R. I., these youths, bearing their white canvas bags, which in the navy take the place of "wardrobe trunks," stand on the threshold of the great adventure—war—with honor and sacrifice for country as the two great prizes. The Newport Naval Training Station is to the bluejacket what West Point is to American army officers and Annapolis is to the future admirals of our fleets. Here he receives instruction in the essentials of seamanship. At the present time all the pupils at this school are undergoing intensive training to fit them for the immediate needs of the hour.

© American Press Association

A NAVAL MILITIA BUGLER SOUNDING A CALL "TO THE COLORS"

In twenty million American homes fathers and sons are waiting for this call, and when the summons comes there will be no shirking of responsibility. Mothers, wives, and daughters also will hear this challenge, and with hearts steeled to sacrifice will bravely bid farewell to those who go to battle for America and humanity.



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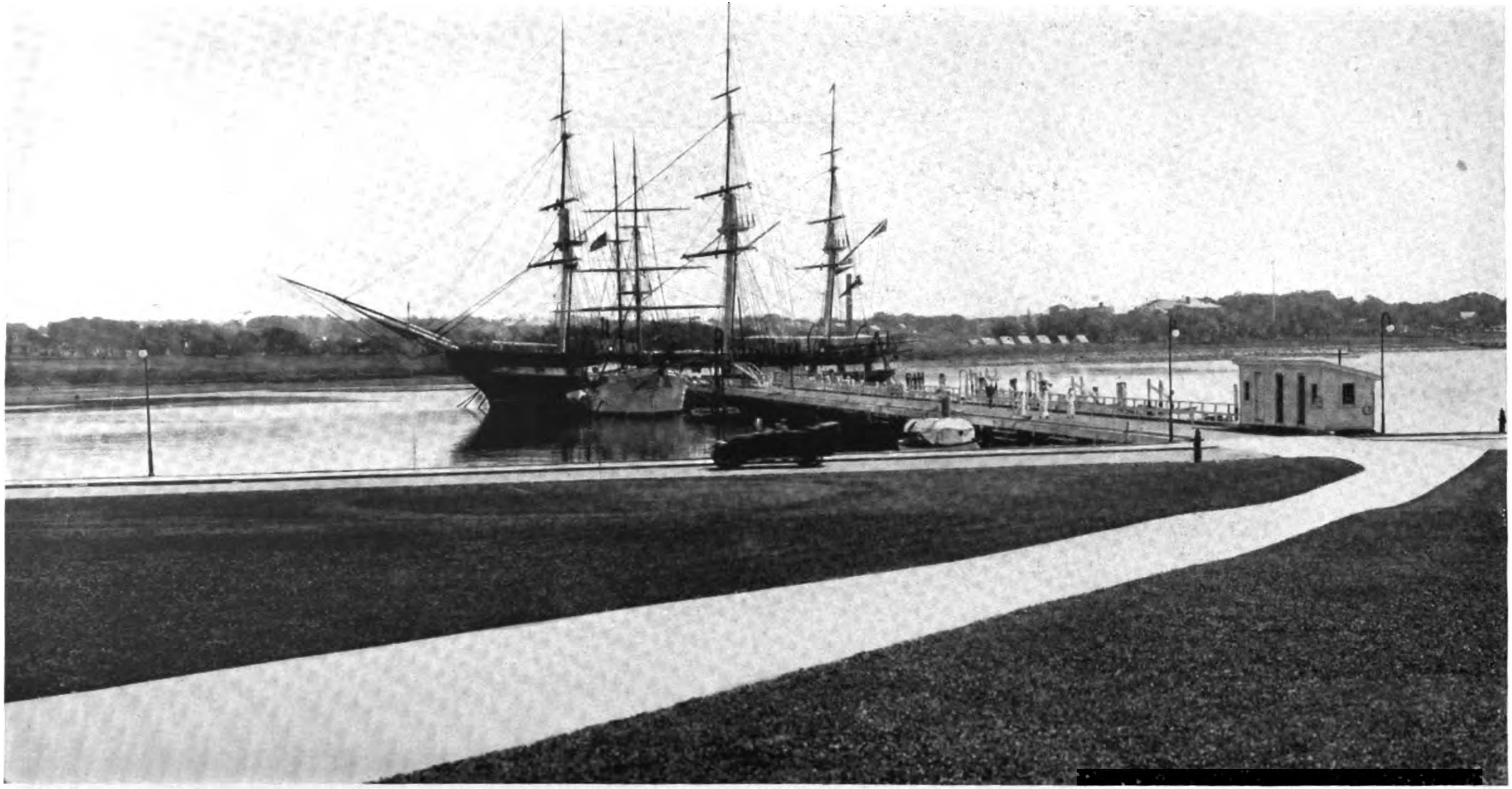
A NATIONAL GUARDSMAN COMPLETELY EQUIPPED FOR SERVICE

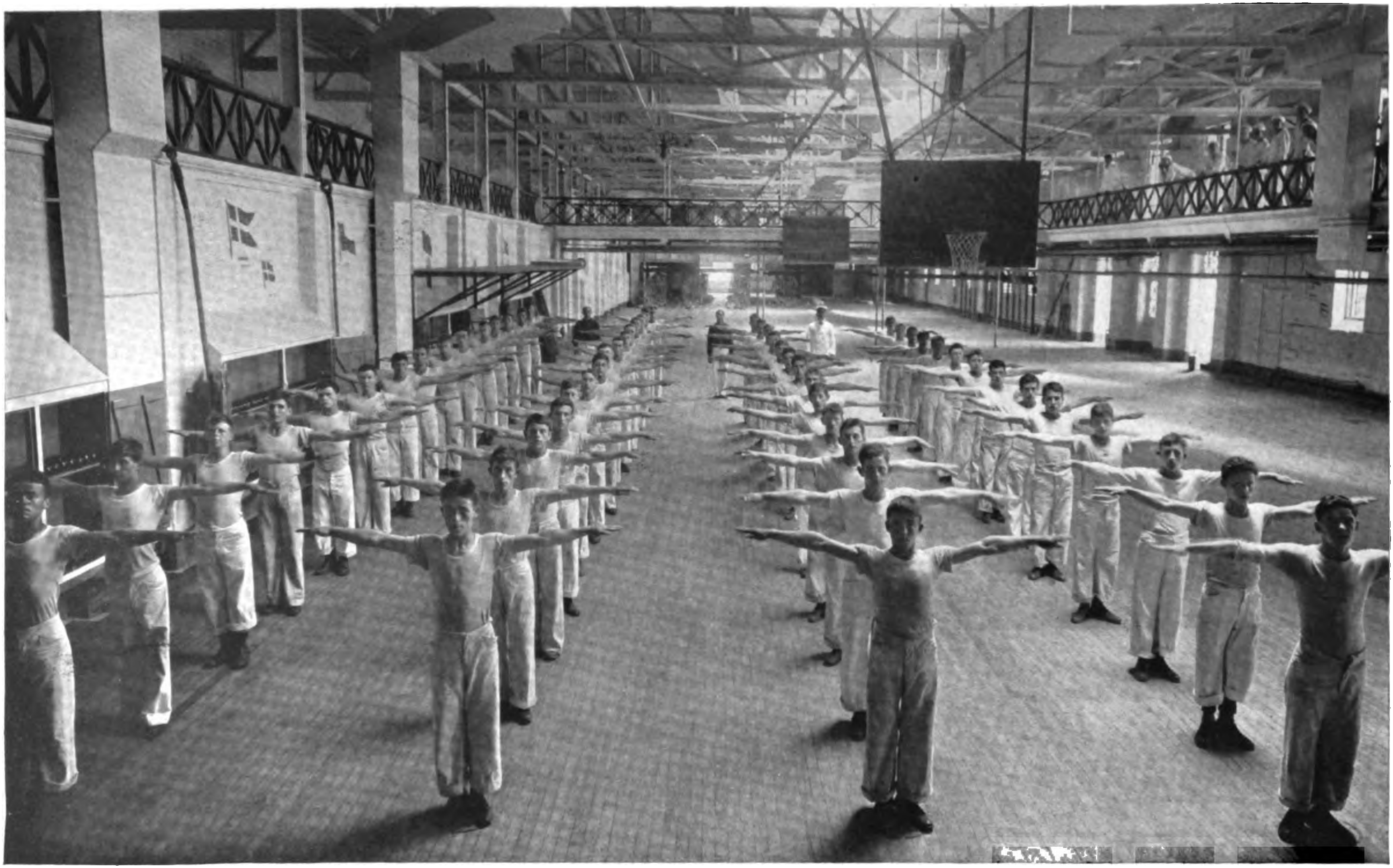
On his back this American fighting man carries his blanket roll, small shovel, bag, etc. His canteen is at his belt. He is armed with a .30 caliber U. S. Army rifle. Minimum weight for maximum efficiency is the principle upon which his whole outfit has been designed.



Photograph by United States Navy Department

U. S. S. "CONSTELLATION" MOORED TO A WHARF: NEWPORT, R. I.

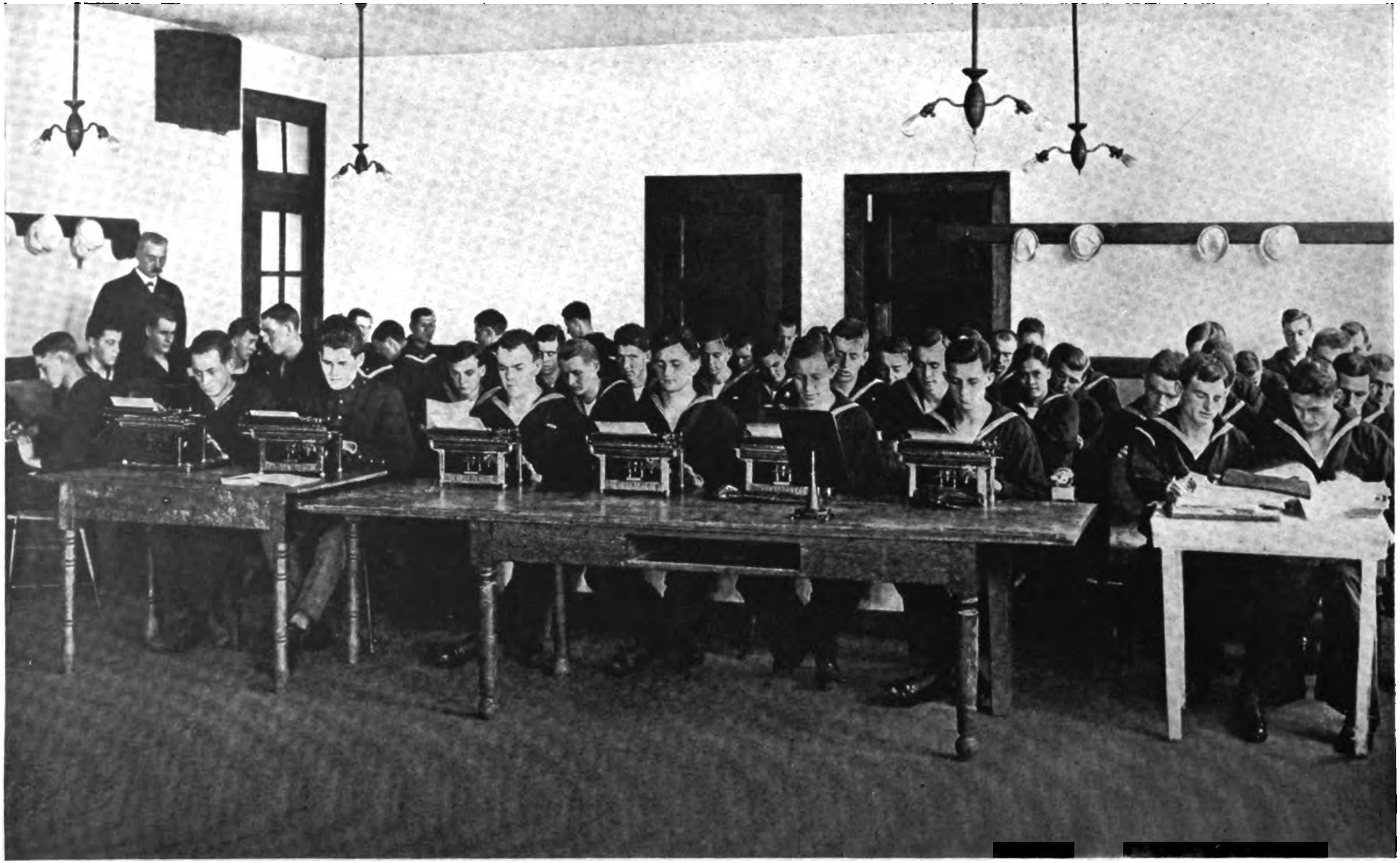
Born into the American Navy in 1798, the same year which marked the advent of the more famous *Constitution*, this stalwart fighting craft, flagship of Commodore Thomas Truxton, carried the Stars and Stripes to victory in two of the most brilliant naval engagements in the history of our nation. Like *Old Ironsides*, the *Constellation* is preserved as a shrine at which bluejackets and marines become imbued with the spirit **which animated American seamen in the early days of the Republic.**



Photograph by United States Navy Department

GYMNASIUM INSTRUCTION IN THE NAVAL TRAINING STATION: NEWPORT, R. I.

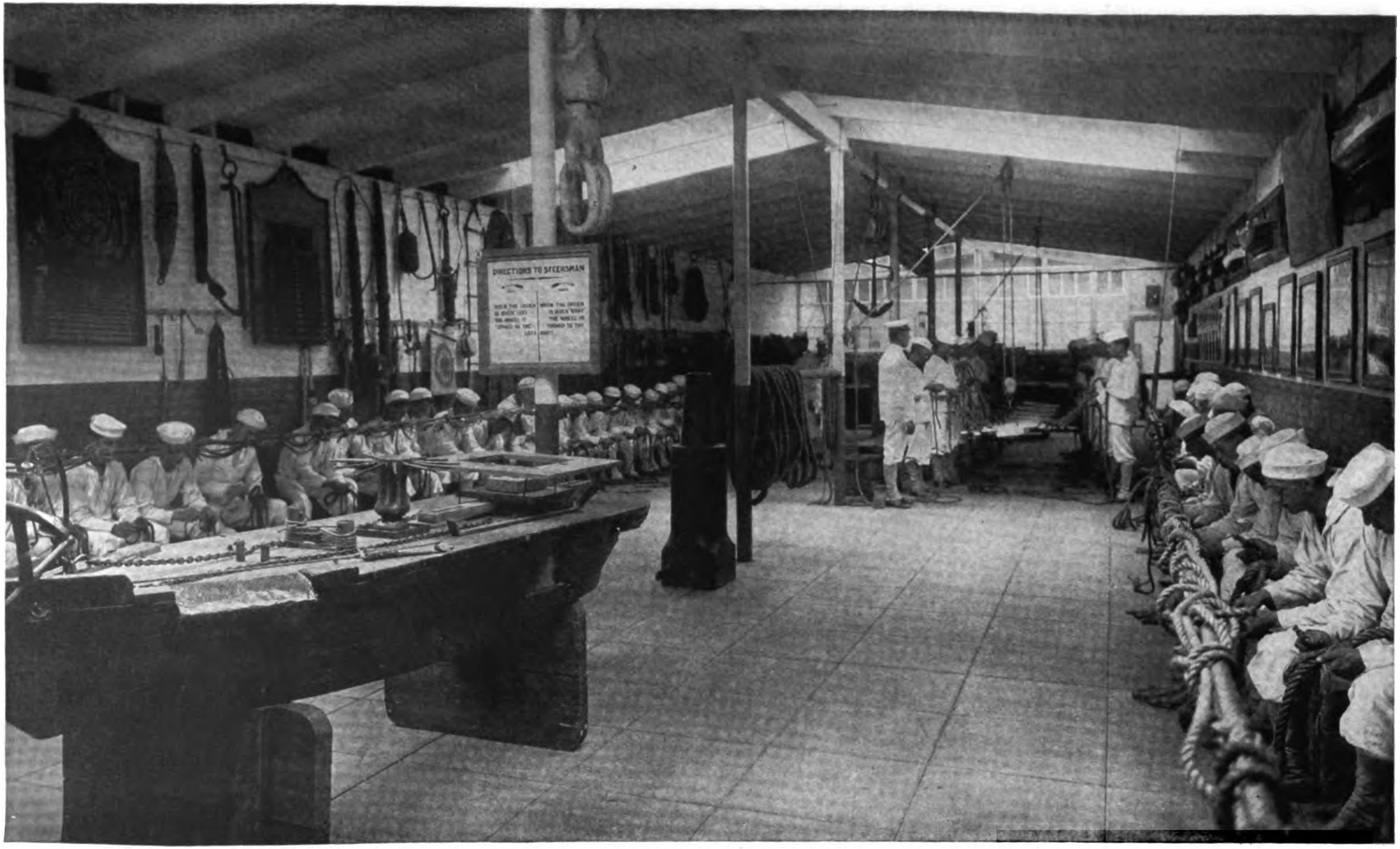
Upon the sturdy strength of these youthful shoulders the United States will rely confidently in the death struggle with the sinister German submarines; and no American doubts the courage or the stamina of these about-to-be fighting men of a navy which has never yet known inglorious defeat.



Photograph by United States Navy Department

YEOMEN'S SCHOOL, NAVAL TRAINING STATION: NEWPORT, R. I.

In order to perform efficiently and expeditiously the clerical work on board a modern warship, yeomen must be proficient in stenography and typewriting; hence this group of young enlisted men resembling a class in a business college



Photograph by United States Navy Department

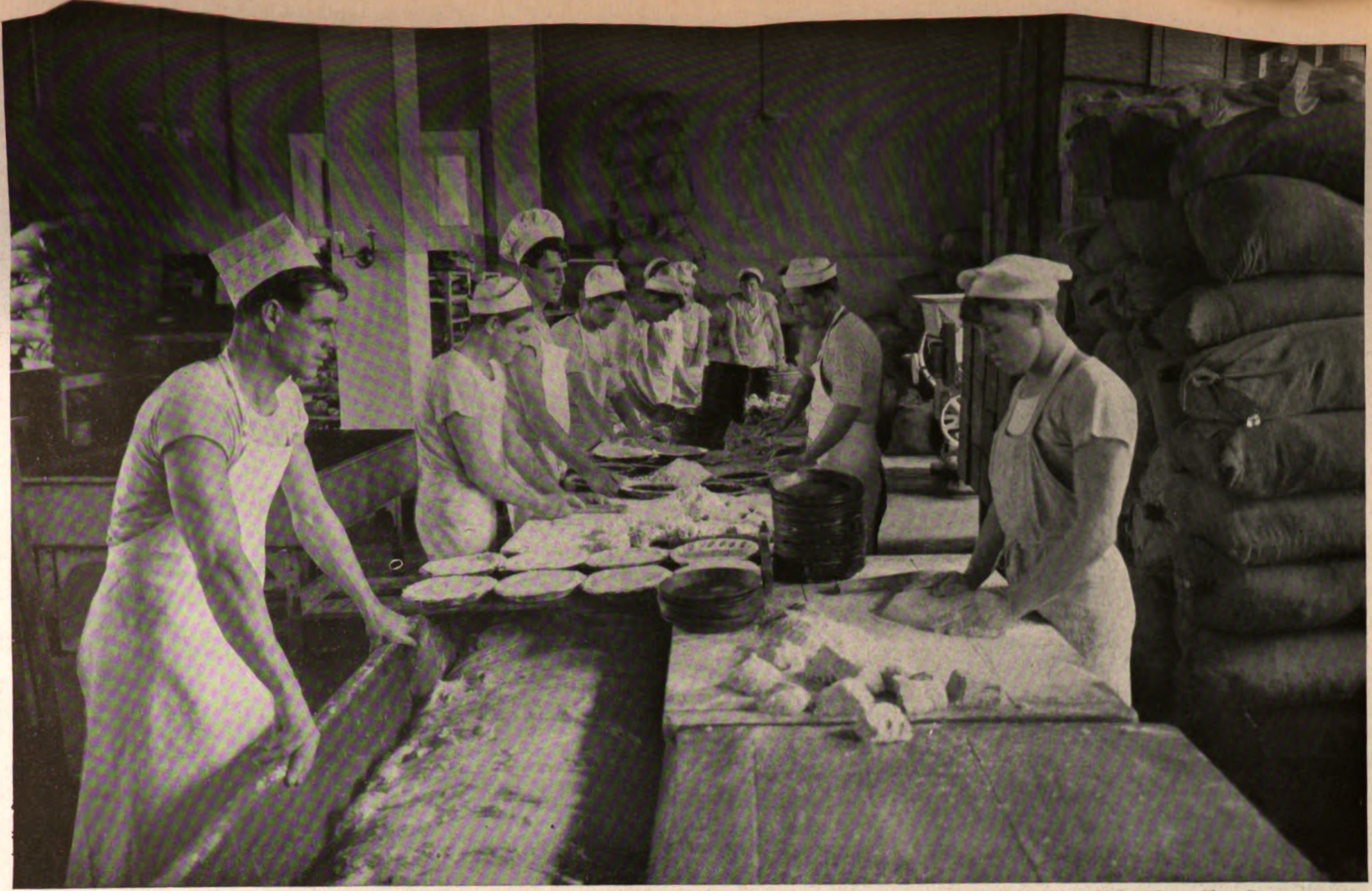
SCHOOL FOR SAILORS, NAVAL TRAINING STATION: NEWPORT, R. I.

Instead of working at a blackboard with chalk, these pupils solve their problems on a wooden rail with rope. The course in elementary seamanship conducted in this rigging loft includes a mastery of the subject of knotting and splicing

Photograph by United States Navy Department

PASTRY CLASS, COMMISSARY SCHOOL, NAVAL TRAINING STATION: NEWPORT, R. I.

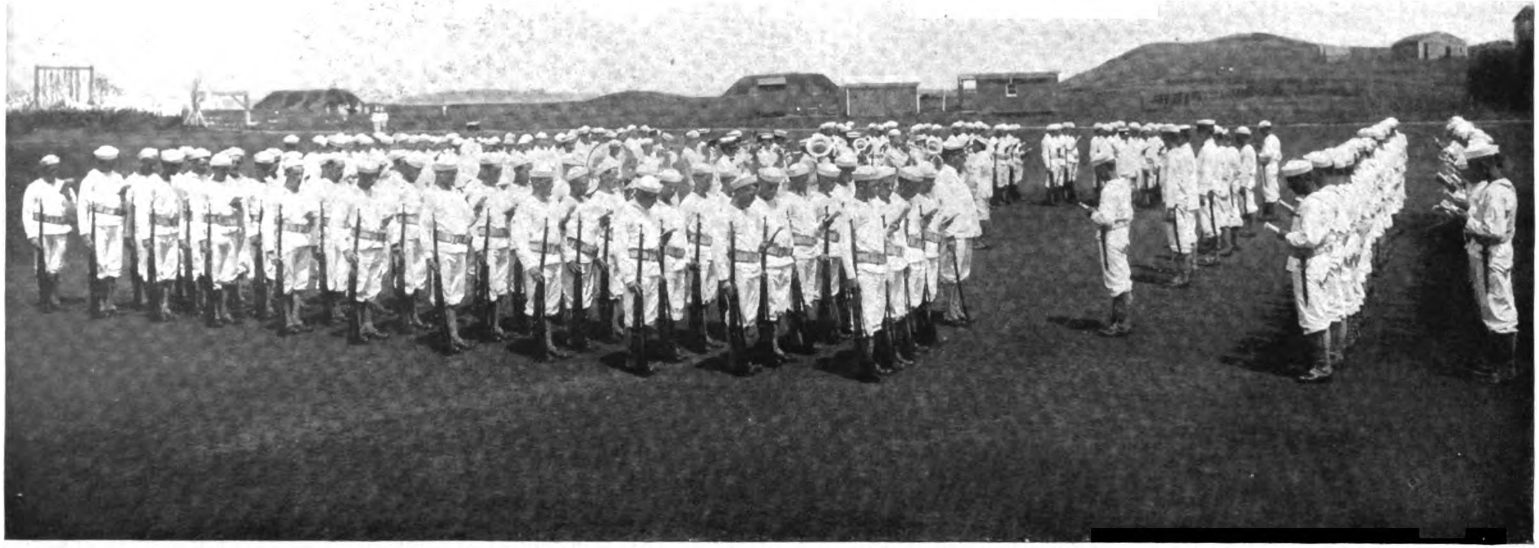
To be "well versed in the arts of pies, custards, and tarts" is an accomplishment no less vital to the success of a navy than gunnery or signaling. Each must do his bit on a warship, and one of the most important of these is cookery, which keeps in fighting trim the man who points the gun and the officer who navigates the ship.



Photograph by United States Navy Department

CLASS FOR BAKERS, COMMISSARY SCHOOL, NAVAL TRAINING STATION: NEWPORT, R. I.

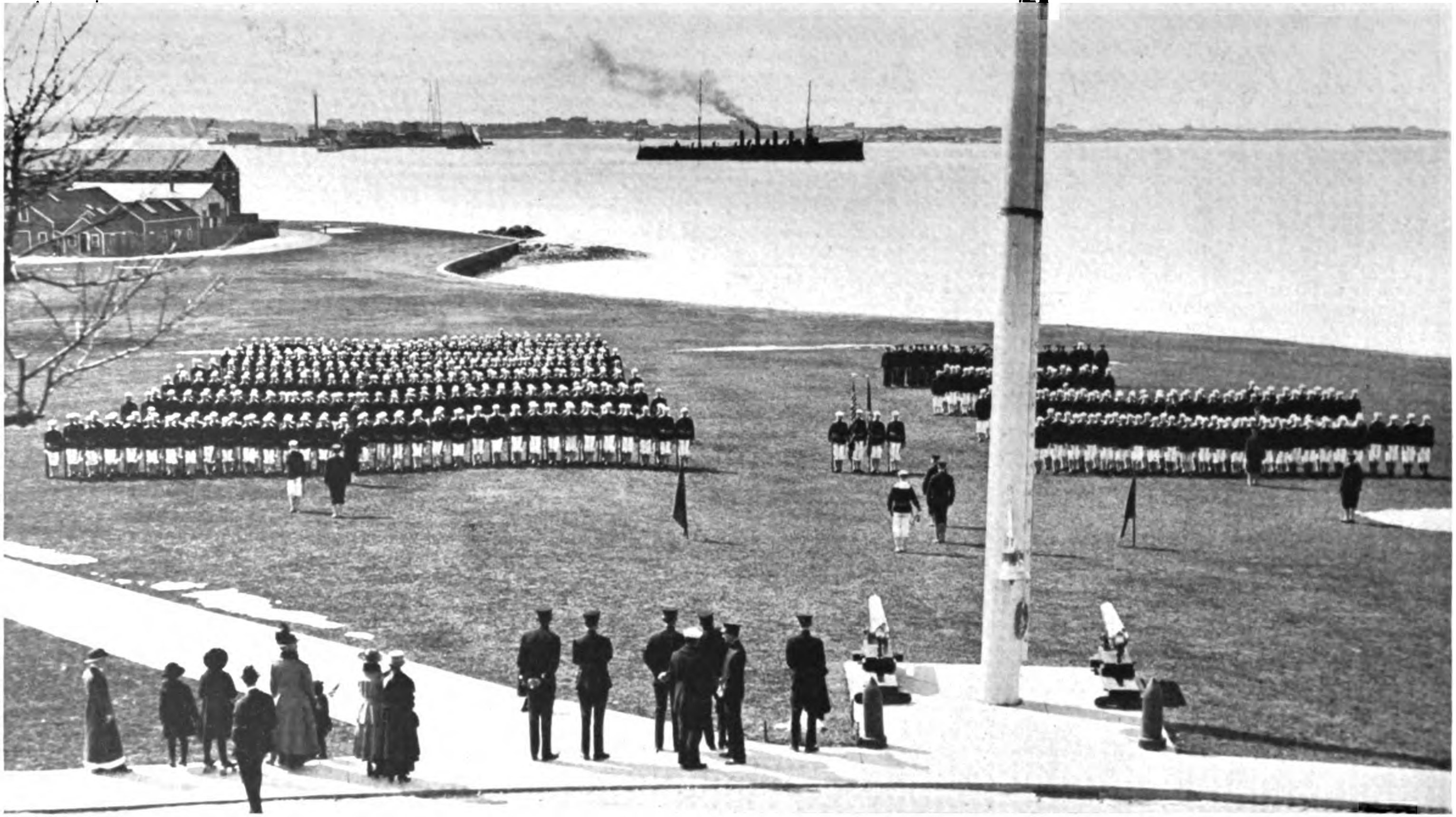
Napoleon's axiom as to the part of its anatomy on which an army travels applies with equal force to a navy. Uncle Sam is careful to see that his marines and bluejackets are provided not only with ample but with *wholesome* food; hence his schools for cooks.



Photograph by United States Navy Department

LEARNING THE NATIONAL AIR

An open-air singing class at the Naval Training Station, Newport, R. I. American bluejackets and marines are not expected to rival grand opera barytones and tenors, but they are supposed to know how to sing "The Star Spangled Banner."



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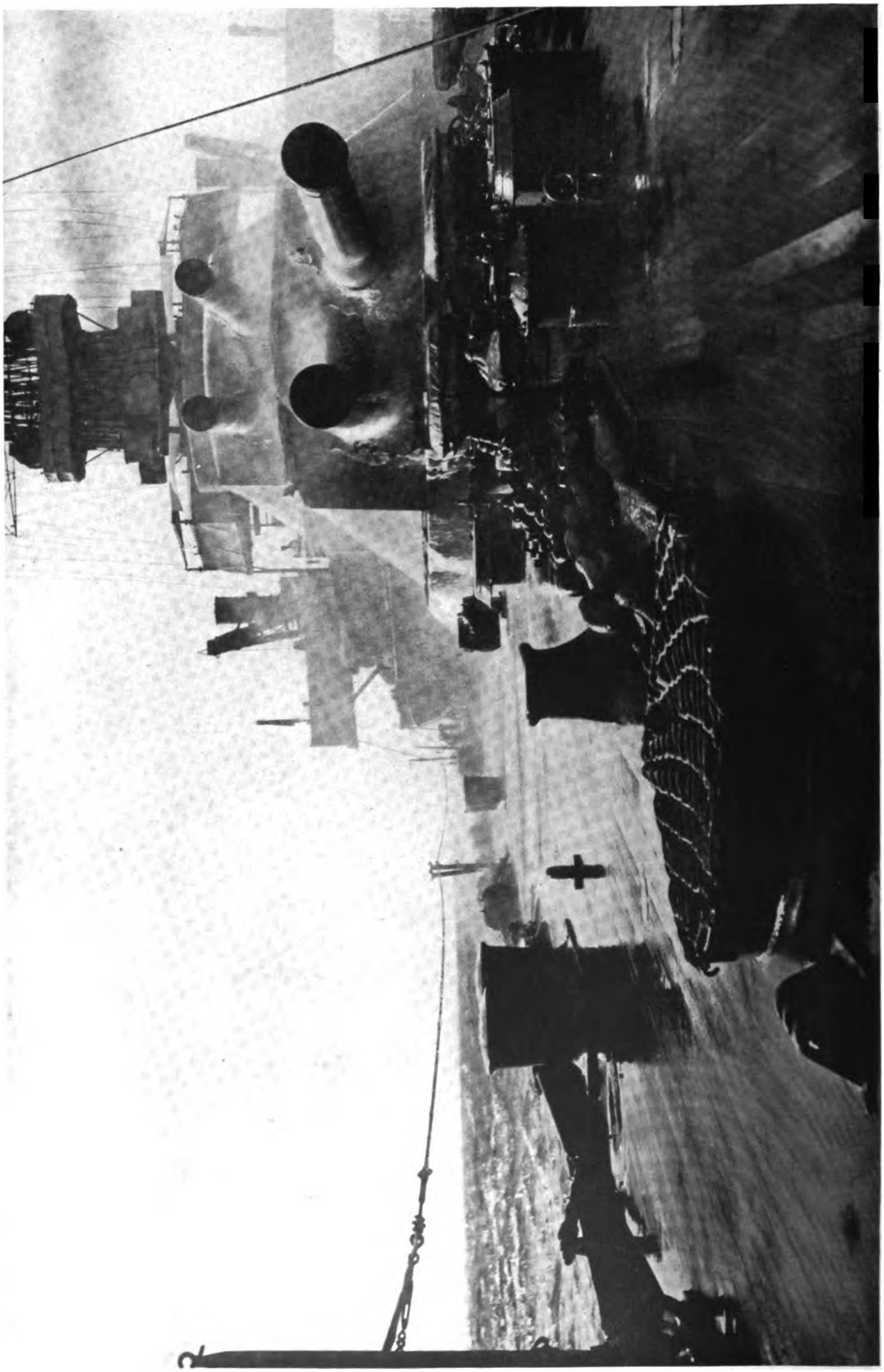
LINED UP FOR INSPECTION

Naval recruits at the Newport Naval Training Station. The cruiser *Birmingham* can be seen in the background.



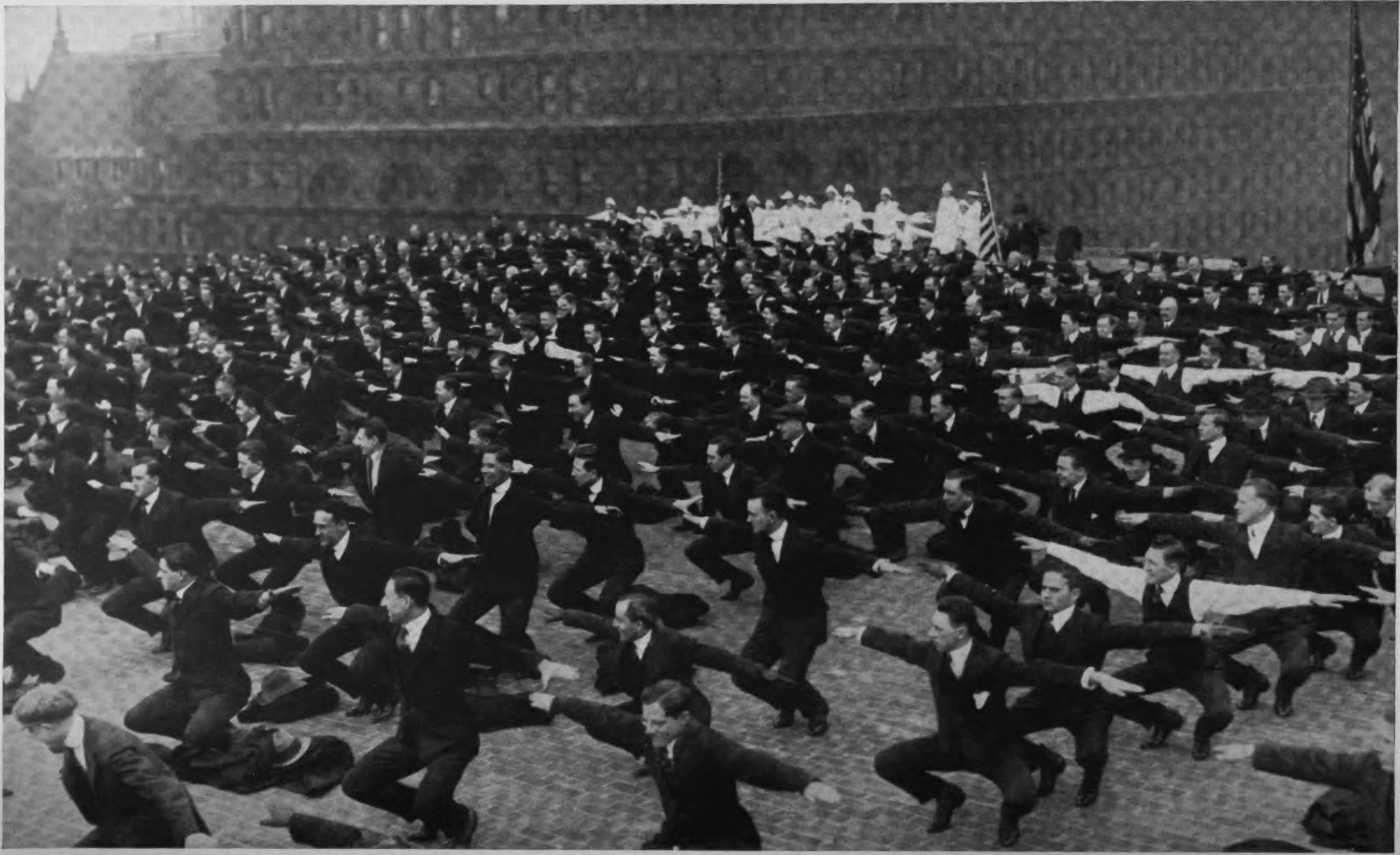
© Lieutenant Commander James B. Gilmer, U. S. S. New York

OCEAN SPRAY: U. S. S. "NEW YORK"

Photograph by United States Signal Corps

CLASS IN TELEPHONY: ENLISTED MEN, U. S. ARMY

The province of the telephone in modern warfare is constantly broadening. It is one of the agencies which has robbed battle of much of its picturesqueness, romance, and glamor; for the dashing dispatch rider on his foam-flecked steed is practically a being of the past, more antiquated than the armored knight of medieval days. A message sent by telephone annihilates space and time, whereas the dispatch rider would, in most cases, be annihilated by shrapnel.



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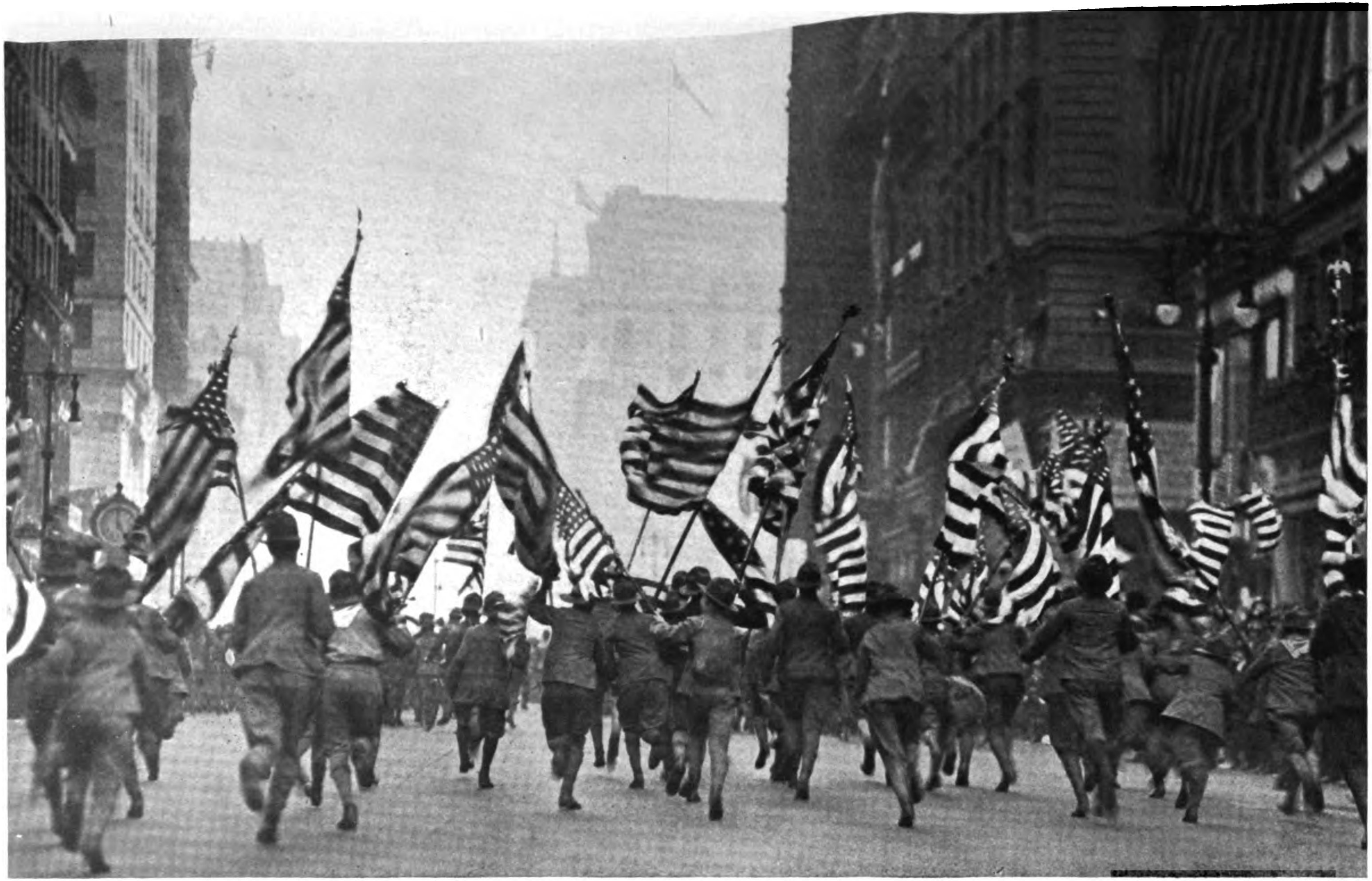
DEPARTMENT STORE EMPLOYEES PREPARING FOR WAR

"An army of clerks and shopkeepers!" was the scornful epithet which the militaristic Prussians hurled at Britain's first hundred thousands sent to the trenches. But derision soon changed to admiration. Among America's first five hundred thousand, also, there will be many clerks, salesmen, bookkeepers, and floor-walkers, including some of the 600 stalwart young men shown here—men who are giving a portion of their luncheon time each day to physical training on the roof of the big New York department store in which they are employed. The girls in the background are salesgirls who have organized as a corps of nurses under the direction of the store physician.



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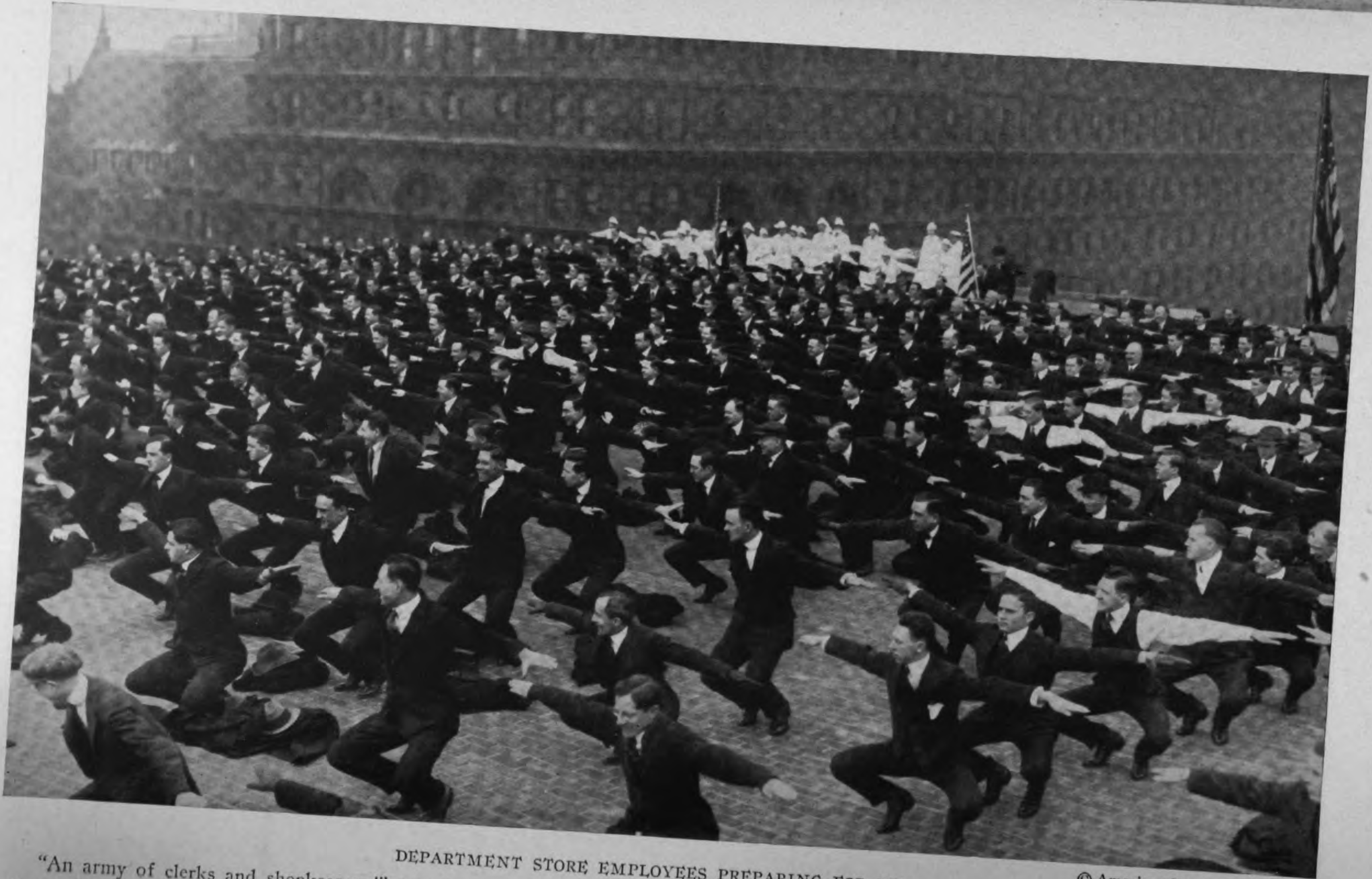
"WAKE UP, AMERICA!"

It was an inspiring moment when. during the great parade up Fifth avenue, New York, recently, the boy scouts charged with flags flying



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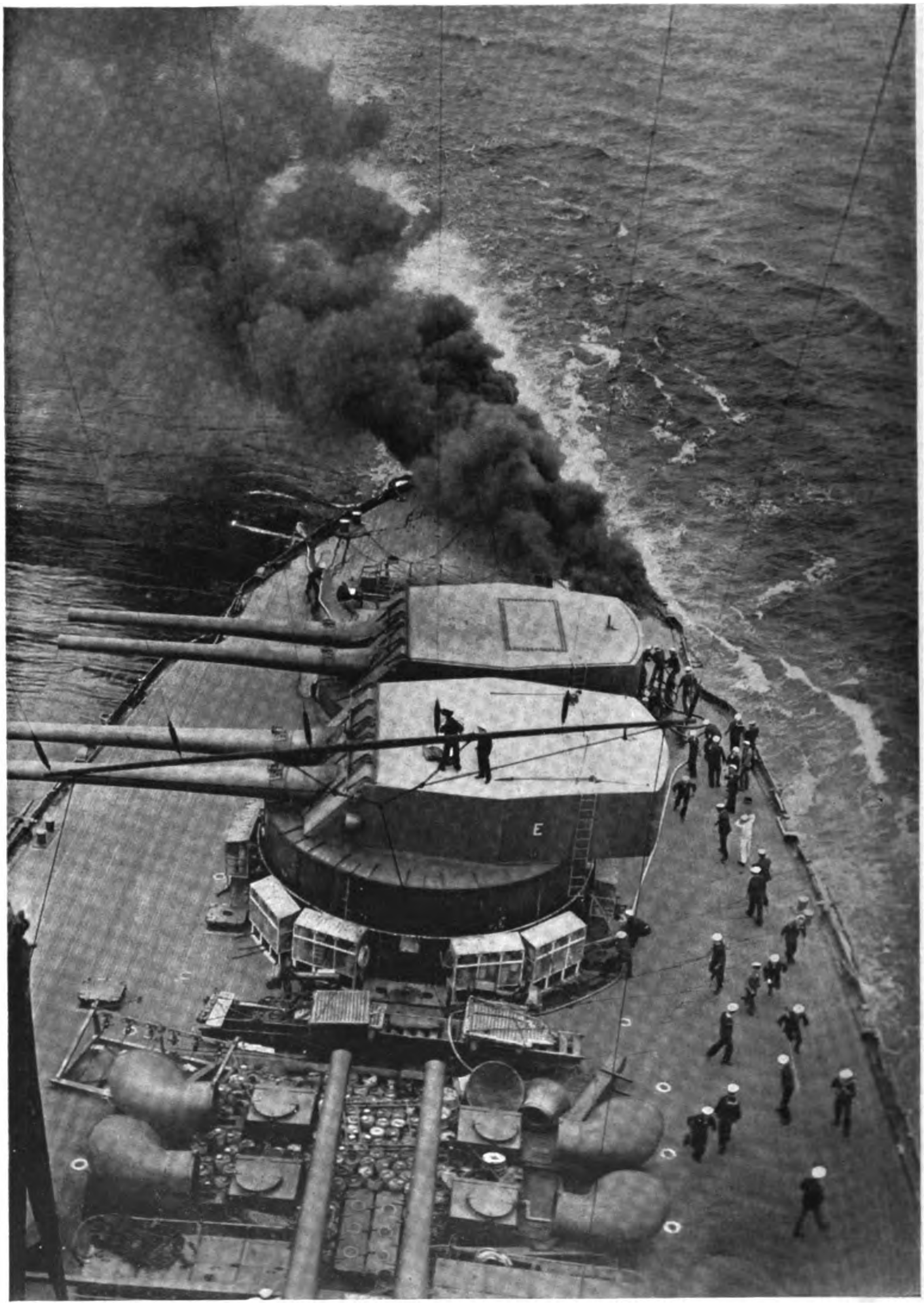

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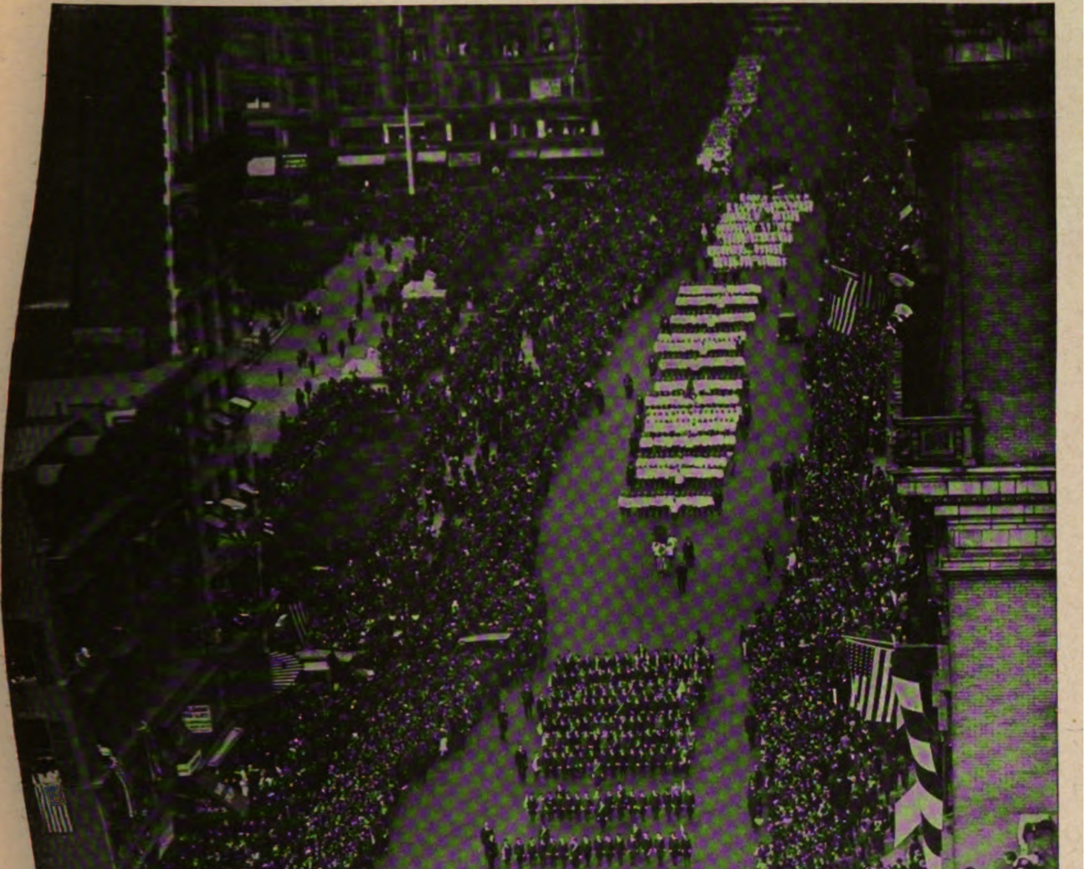
BATTLESHIP ABLAZE IN MID-OCEAN

Owing to the perfect organization of the crew of a thousand or more men on a super-dreadnought, a fire at sea is not usually so serious as a landsman would imagine. With the first alarm each individual on board becomes a fire-fighter, rushing to his post of duty. Water compartments are closed and preparations are made for flooding the magazines if the flames threaten these store-rooms of destruction.



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SALUTING THE FLAG

An impressive ceremony which took place in Fifth Avenue, New York, opposite the Union League Club reviewing stand during the recent "Wake Up, America" celebration. Thousands marched in the procession; hundreds of thousands lined the great thoroughfare and voiced their approval in a succession of cheers.

THE OUTSPEAKING OF A GREAT DEMOCRACY

The Proceedings of the Chamber of Deputies of France on Friday, April 6, 1917, as Reported in the "Journal Officiel de La République Francaise"

PRESIDENT OF THE CHAMBER OF DEPUTIES: The President of the Council has the floor.

MR. RIBOT, PRESIDENT OF THE COUNCIL, MINISTER OF FOREIGN AFFAIRS: Before the Chamber adjourns the Government asks it to address a cordial greeting to the great Republic of the United States. (*Cheers. All the deputies rise, turn toward the diplomatic gallery, and applaud* [*the Ambassador of the United States being in the gallery*]. *Many cries of "Long live the Republic."*)

You have read the admirable message of President Wilson. We all feel that something great, something which exceeds the proportions of a political event, has been accomplished. (*Cries of assent.*)

It is an historic fact of unequaled importance (*applause*)—this entry into the war on the side of us and our allies by the most peaceful democracy in the world. (*Loud applause.*) After having done everything to affirm its attachment to peace, the great American nation declares solemnly that it cannot remain neutral in this immense conflict between right and violence, between civilization and barbarism. (*Loud and prolonged applause.*) It holds that honor requires it to take up the defiance flung at all rules of international law so laboriously built up by civilized nations. (*Applause.*)

It declares at the same time that it is not fighting for self-interest, desires neither conquest nor compensation, intends only to help toward a victory of the cause of law and liberty. (*All the deputies rise and applaud.*)

A MESSAGE OF DELIVERANCE

The grandeur, the nobility, of this action is enhanced by the simplicity and serenity of the language of the illustrious leader of that great democracy. (*Loud applause.*)

If the world had entertained the least doubt of the profound meaning of this war in which we are engaged, the message of the President of the United States would dissipate all obscurity. It makes apparent to all that the struggle is verily a struggle between the liberal spirit of modern societies and the spirit of oppression of societies still enslaved to military despotism. (*Prolonged applause.*) It is for this reason that the message rings in the depths of all hearts like a message of deliverance to the world. (*Applause.*)

The people which, under the inspiration of the writings of our philosophers, declared its rights in the eighteenth century, the people who place Washington and Lincoln foremost among their heroes (*applause*), the people who in the last century suffered a civil war for the abolition of slavery (*cheers; the whole Chamber rises and applauds*), were indeed worthy to give such an example to the world.

Thus they remain faithful to the traditions of the founders of their independence and demonstrate that the enormous rise of their industrial strength and of their economic and financial power has not weakened in them that need for an ideal without which there can be no great nation. (*Applause.*)

A FRIENDSHIP RATIFIED IN BLOOD

What touches us particularly is that the United States has held to the friendship which at an earlier time was ratified in blood. (*Applause.*) We bear witness with grateful joy to the enduring sympathy between the peoples, which is one of the delicate virtues the bosom of a democracy can nourish.

The Star-spangled Banner and the Tricolor will fly side by side; our hands will join; our hearts beat in unison. This will mean for us, after so much suffering, heroically borne, so many bereavements, so many ruins, a renewal of the sentiments which have animated and sustained us during this long trial. The powerful, decisive aid which the United States brings us is not only a material aid; it will be especially moral aid, a real consolation. (*Loud applause.*)

Seeing the conscience of peoples everywhere in the world awake and rise in an immense protest against the atrocities of which we are the victims, we feel more keenly that we are fighting not only for ourselves and for our allies, but for something immortal (*applause*), and that we are laying the foundations of a new order. (*Loud applause.*) Thus our sacrifices will not have been in vain; the generous blood poured out by the sons of France will have sowed fertile seeds in the ideas of justice and of liberty fundamentally necessary to concord between nations. (*Applause.*)

In the name of the whole country, the government of the French Republic addresses to the government and people of the United States, with the expression of its gratitude, its warmest good wishes. (*Prolonged cheers. All the deputies rise and turn applauding to the diplomatic gallery.*)

THE HARVEST OF JUSTICE

MANY VOICES: The proclamation!

MR. PAUL DECHANEL, PRESIDENT OF THE CHAMBER: The proclamation of the speech which the Chamber has just applauded is asked. There is no opposition? The proclamation is ordered.

The French Chamber greets with enthusiasm the verdict of the President of the Republic of the United States, who has indeed spoken for justice, and the vigorous decision of the Federal Senate accepting the war imposed by Germany.

Æschylus says in "The Persians": "When insolence takes root, it grows into crime; the harvest is suffering."

And we can say: "The growth of the crime brings vengeance; after the harvest of suffering comes the harvest of justice!" (*Loud applause.*)

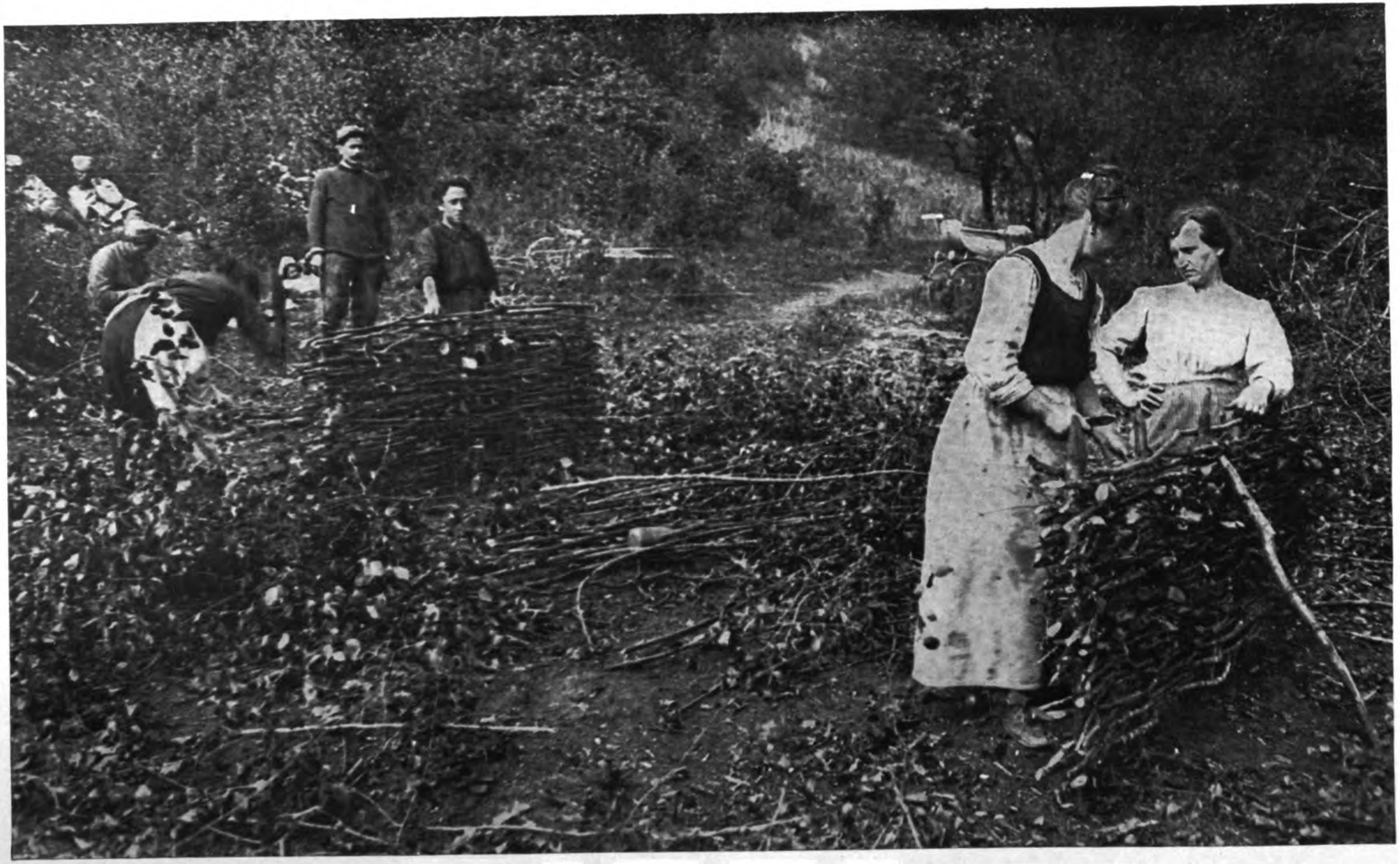
The cry of the women and children from the depths of the abyss where hideous wickedness flung them echoed from one end of the earth to the other. Washington and Lincoln trembled in their graves; their great spirit has roused America. (*Loud applause.*)

And is it a question only of avenging Americans? Is it a question only of punishing the violation of treaties signed by the United States? No; the eternal truths proclaimed in the Declaration of 1776, the sacred causes which La Fayette and Rochambeau defended (*applause*), the ideal of pure consciences from which the great Republic was born—honor, morality, liberty—these are the supreme values which shine in the folds of the Star-spangled Banner. (*Loud applause.*)

ALL AMERICA ARRAYED AGAINST MAD ARROGANCE

Descendants of the Puritans of New England, brought up on the precepts of the Gospel, and who under the eyes of God are about to punish the infernal creation of evil, falsehood, perjury, assassination, profanation, rape, slavery, martyrdom, and all kinds of disasters; Catholics, struck to the heart by curses against their religion, by outrages against their cathedrals and statues, reaching a climax in the destruction of Louvain and Rheims; university professors, trustworthy guardians of law and learning; industrialists of the East and Middle West, farmers and agriculturists of the West; workmen and artisans, threatened by the torpedoing of vessels, by the interruption of commerce, revolted by the insults to their national colors—all are arrayed against the mad arrogance which would enslave the earth, the sea, the heavens, and the souls of men. (*Prolonged applause and cheers.*)

At a time when, as in the heroic times of the American Revolution, the Americans are to fight with us, let us repeat once more: We wish to prevent no one from living, working, and trading freely; but the tyranny of Prussia has become a peril for the New World as for the Old, for England as for Russia, for Italy as for Austria, and for Germany itself. (*Applause.*) To free the world, by a common effort of all democratic peoples,



WOMEN IN THE DEPARTMENT OF MEURTHE AND MOSELLE EMPLOYED IN FASHIONING DEFENSE WORK FOR THE SOLDIERS

These screens of brushwood have a variety of uses, including their employment as masks for concealed batteries and dugouts. The ancestors of these weavers of twigs and saplings made France famous as weavers of the matchless Gobelin tapestries.

from the yoke of a feudal and military caste in order to found peace upon right, is a work of human deliverance and universal good. (*Applause.*)

THE IMMORTAL ACT OF A GLORIOUS NATION

In accomplishing, under an administration henceforth immortal (*applause, cheers; all rise and applaud*), the greatest act in its annals since the abolition of slavery, the glorious nation whose whole history is but a development of the idea of liberty (*applause*) remains true to its lofty origin and creates for itself another claim to the gratitude of mankind. (*Applause.*)

The French Republic, across the ruins of its cities and its monuments, devastated without reason or excuse by shameful savagery (*loud applause*), sends to its beloved sister Republic in America the palms of the Marne, the Yser, and of Verdun and the Somme, to which new victories will soon be added. (*Prolonged applause, cheers; all the deputies rise.*)

MANY VOICES: We call for the proclamation!

MR. COLLIARD: I ask that the two speeches which the Chamber has just heard be issued as proclamations and read in the schools of France.

MR. MAUGER: I second the motion.

PRESIDENT OF THE CHAMBER: The proclamation of the speeches which the Chamber has just heard is requested. There is no opposition? The proclamation is ordered.

OUR HERITAGE OF LIBERTY

An Address Before the United States Senate by M. Viviani, President of the French Commission to the United States, May 1, 1917

MR. PRESIDENT AND SENATORS: Since I have been granted the supreme honor of speaking before the representatives of the American people, may I ask them first to allow me to thank this magnificent Capital for the welcome it has accorded us? Accustomed as we are in our own free land to popular manifestations, and though we had been warned by your fellow-countrymen who live in Paris of the enthusiasm burning in your hearts, we are still full of the emotion raised by the sights that awaited us.

I shall never cease to see the proud and stalwart men who saluted our passage; your women, whose grace adds fresh beauty to your city, their arms outstretched, full of flowers; and your children hurrying to meet us as if our coming were looked upon as a lesson for them—all with one accord acclaiming in our perishable persons immortal France.

And I predict there will be a yet grander manifestation on the day when your illustrious President, relieved from the burden of power, will come among us bearing the salute of the Republic of the United States to a free Europe, whose foundations from end to end shall be based on right.

It is with unspeakable emotion that we crossed the threshold of this legislative palace, where prudence and boldness meet, and that I for the first time in the annals of America, though a foreigner, speak in this hall which only a few days since resounded with the words of virile force.

A MAGNIFICENT EXAMPLE FOR ALL DEMOCRACIES

You have set all the democracies of the world the most magnificent example. So soon as the common peril was made manifest to you, with simplicity and within a few short days you voted a formidable war credit and proclaimed that a formidable army was to be raised. President Wilson's commentary on his acts, which you made yours, remains in the history of free peoples the weightiest of lessons.

Doubtless you were resolved to avenge the insults offered your flag, which the whole world respected; doubtless through the thickness of these massive walls the mournful cry of all the victims that criminal hands hurled into the depths of the sea has reached and stirred your souls; but it will be your honor in history that

Photograph by Paul Thompson

BARRELS OF PORCELAIN AT THE DOORS OF A FRENCH FACTORY READY FOR SHIPMENT TO THE UNITED STATES: LIMOGES, FRANCE

Those industrial institutions whose skilled workmen were required neither for the trenches nor for the munition factories France has endeavored to operate without interruption. The ceramic establishments which were not requisitioned for the manufacture of crucibles needed in producing high explosives have continued to make beautiful porcelain, thus contributing their bit toward the financial welfare of the nation.

you also heard the cry of humanity and invoked against autocracy the right of democracies.

And I can only wonder as I speak what, if they still have any power to think, are the thoughts of the autocrats who three years ago against us, three months ago against you, unchained this conflict.

Ah! doubtless they said among themselves that a democracy is an ideal government; that it showers reforms on mankind; that it can in the domain of labor quicken all economic activities. And yet now we see the French Republic fighting in defense of its territory and the liberty of nations and opposing to the avalanche let loose by Prussian militarism the union of all its children, who are still capable of striking many a weighty blow.

And now we see England, far removed like you from conscription, who has also, by virtue of a discipline all accept, raised from her soil millions of fighting men. And we see other nations accomplishing the same act; and that liberty not only inflames all hearts, but coördinates and brings into being all needed efforts.

And now we see all America rise and sharpen her weapons in the midst of peace for the common struggle.

ORGANIZING THE FEDERATION OF THE WORLD

Together we will carry on that struggle, and when by force we have at last imposed military victory our labors will not be concluded. Our task will be—I quote the noble words of President Wilson—to organize the society of nations.

I well know that our enemies, who have never seen before them anything but horizons of carnage, will never cease to jeer at so noble a design. Such has always been the fate of great ideas at their birth; and if thinkers and men of action had allowed themselves to be discouraged by skeptics, mankind would still be in its infancy and we should still be slaves. After material victory we will win this moral victory.

We will shatter the ponderous sword of militarism; we will establish guaranties for peace; and then we can disappear from the world's stage, since we shall leave at the cost of our common immolation the noblest heritage future generations can possess.

THEIR MONUMENT IS IN OUR HEARTS

Address by M. Viviani Before the Tomb of Washington, at Mount Vernon, April 29, 1917

WE COULD not remain longer in Washington without accomplishing this pious pilgrimage. In this spot lies all that is mortal of a great hero. Close by this spot is the modest abode where Washington rested after the tremendous labor of achieving for a nation its emancipation.

In this spot meet the admiration of the whole world and the veneration of the American people. In this spot rise before us the glorious memories left by the soldiers of France led by Rochambeau and Lafayette; a descendant of the latter, my friend, M. de Chambrun, accompanies us.

And I esteem it a supreme honor, as well as a satisfaction for my conscience, to be entitled to render this homage to our ancestors in the presence of my colleague and friend, Mr. Balfour, who so nobly represents his great nation. By thus coming to lay here the respectful tribute of every English mind he shows, in this historic moment of communion which France has willed, what nations that live for liberty can do.

When we contemplate in the distant past the luminous presence of Washington, in nearer times the majestic figure of Abraham Lincoln; when we respectfully salute President Wilson, the worthy heir of these great memories, we at one glance measure the vast career of the American people.

It is because the American people proclaimed and won for the nation the right to govern itself, it is because it proclaimed and won the equality of all men, that the free American people at the hour marked by fate has been enabled with commanding force to carry its action beyond the seas; it is because it was resolved to extend its action still further that Congress was enabled to obtain within the space of a few days the vote of conscription and to proclaim the necessity for a national army in the full splendor of civil peace.

In the name of France, I salute the young army which will share in our common glory.

FIGHTING FOR WASHINGTON'S IDEALS

While paying this supreme tribute to the memory of Washington, I do not diminish the effect of my words when I turn my thought to the memory of so many unnamed heroes. I ask you before this tomb to bow in earnest meditation and all the fervor of piety before all the soldiers of the allied nations who for nearly three years have been fighting under different flags for some ideal.

I beg you to address the homage of your hearts and souls to all the heroes, born to live in happiness, in the tranquil pursuit of their labors, in the enjoyment of all human affections, who went into battle with virile cheerfulness and gave themselves up, not to death alone, but to the eternal silence that closes over those whose sacrifice remains unnamed, in the full knowledge that, save for those who loved them, their names would disappear with their bodies.

Their monument is in our hearts. Not the living alone greet us here; the ranks of the dead themselves rise to surround the soldiers of liberty.

At this solemn hour in the history of the world, while saluting from this sacred mound the final victory of justice, I send to the Republic of the United States the greetings of the French Republic.

THE OLDEST FREE ASSEMBLIES

Address of Right Hon. Arthur J. Balfour, in the United States House of Representatives, May 5, 1917

MR. SPEAKER, LADIES AND GENTLEMEN OF THE HOUSE OF REPRESENTATIVES: Will you permit me, on behalf of my friends and myself, to offer you my deepest and sincerest thanks for the rare and valued honor which you have done us by receiving us here today?

We all feel the greatness of this honor; but I think to none of us can it come home so closely as to one who, like myself, has been for 43 years in the service of a free assembly like your own. I rejoice to think that a member—a very old member, I am sorry to say—of the British House of Commons has been received here today by this great sister assembly with such kindness as you have shown to me and to my friends.

Ladies and gentlemen, these two assemblies are the greatest and the oldest of the free assemblies now governing great nations in the world. The history indeed of the two is very different.

The beginnings of the British House of Commons go back to a dim historic past, and its full rights and status have only been conquered and permanently secured after centuries of political struggle.

Your fate has been a happier one. You were called into existence at a much later stage of social development. You came into being complete and perfected and all your powers determined, and your place in the Constitution secured beyond chance of revolution; but, though the history of these two great assemblies is different, each of them represents the great democratic principle to which we look forward as the security for the future peace of the world.

ALL FREE ASSEMBLIES MODELED AFTER THE BRITISH PARLIAMENT AND AMERICAN CONGRESS

All of the free assemblies now to be found governing the great nations of the earth have been modeled either upon your practice or upon ours or upon both combined.

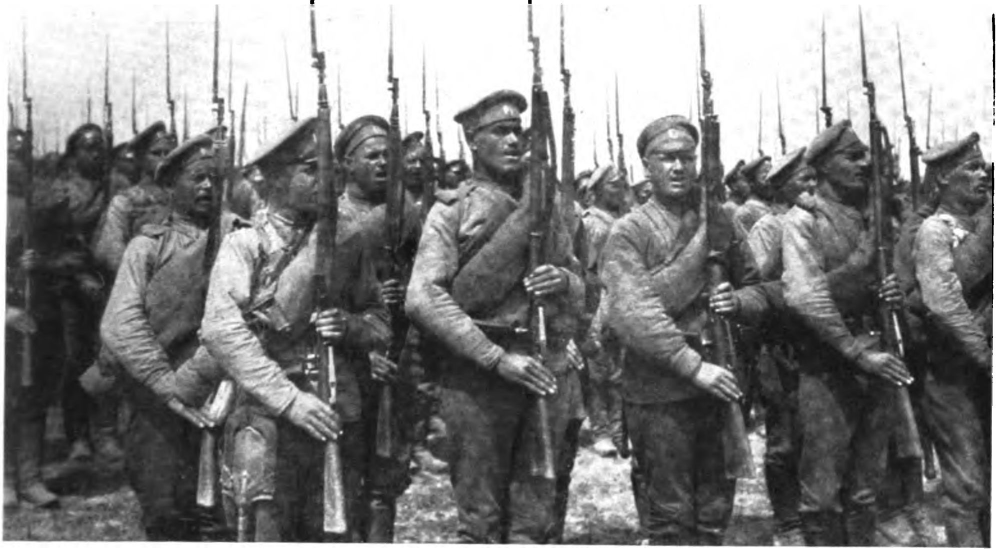
Mr. Speaker, the compliment paid to the mission from Great Britain by such an assembly and upon such an occasion is one not one of us is ever likely to forget. But there is something, after all, even deeper and more significant in the circumstances under which I now have the honor to address you than any which arise out of the interchange of courtesies, however sincere, between the great and friendly nations.

We all, I think, feel instinctively that this is one of the great moments in the history of the world, and that what is now happening on both sides of the Atlantic represents the drawing together of great and free peoples for mutual protection against the aggression of military despotism.

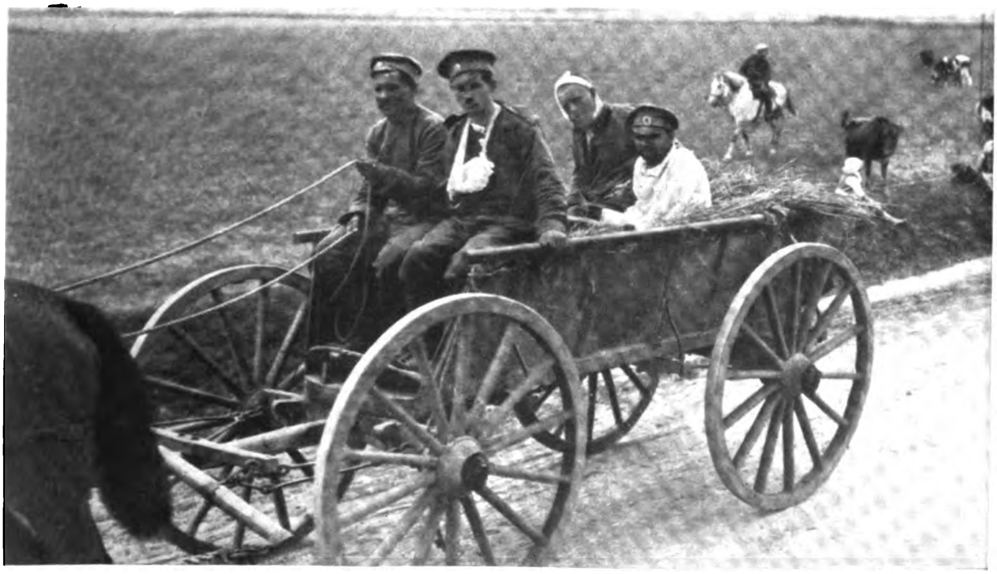
I am not one of those, and none of you are among those, who are such bad democrats as to say that democracies make no mistakes. All free assemblies have made blunders; sometimes they have committed crimes.

PURSUING THE APPALLING OBJECT OF DOMINATING CIVILIZATION

Why is it, then, that we look forward to the spread of free institutions throughout the world, and especially among our present enemies, as one of the greatest guaranties of the future peace of the world? I will tell you, gentlemen, how it seems to me. It is quite true that the people and the representatives of the people may be betrayed by some momentary gust of passion into a policy which they ultimately deplore; but it is only a military despotism of the German type which can, through generations if need be, pursue steadily, remorselessly, unscrupulously, the appalling object of dominating the civilization of mankind.



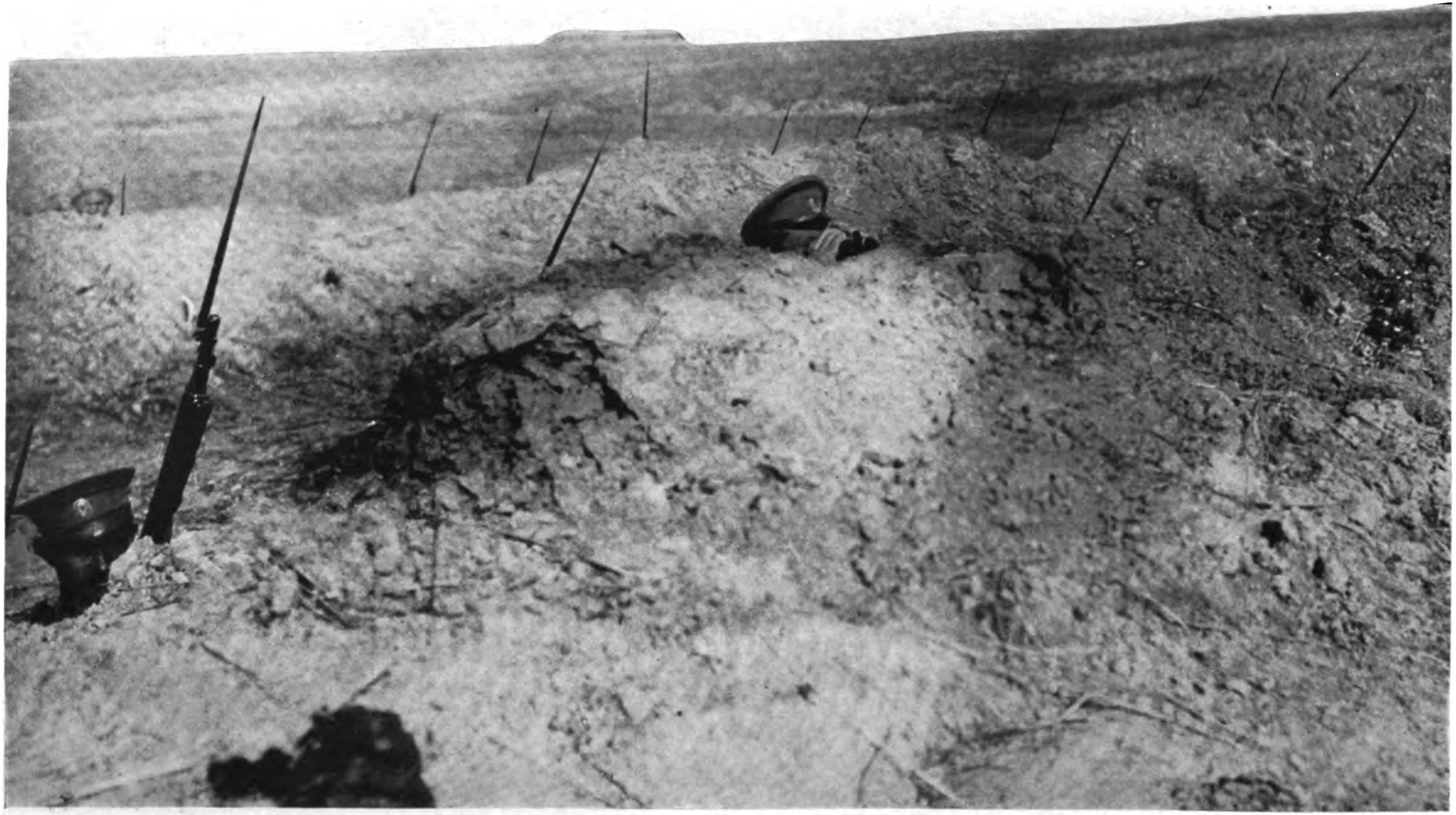
TYPES OF THE MEN WHO DEFENDED WARSAW TILL THE END



Photographs by George H. Mewes

RUSSIAN WOUNDED GOING TO THE REAR

Motor ambulances are a rare luxury in Russia and the wounded are frequently two and three days in peasants' carts before they reach the railhead or base hospitals



Photograph by George H. Mewes

TYPICAL REAR-GUARD TRENCHES IN THE GREAT RUSSIAN RETREAT: A SHELL BURST OVER THIS POSITION JUST AS THE PICTURE WAS TAKEN

And, mark you, this evil, this menace under which we are now suffering, is not one which diminishes with the growth of knowledge and the progress of material civilization, but, on the contrary, it increases with them.

When I was young we used to flatter ourselves that progress inevitably meant peace, and that growth of knowledge was always accompanied, as its natural fruit, by the growth of good will among the nations of the earth. Unhappily, we know better now, and we know there is such a thing in the world as a power which can with unvarying persistency focus all the resources of knowledge and of civilization into the one great task of making itself the moral and material master of the world.

It is against that danger that we, the free peoples of western civilization, have banded ourselves together. It is in that great•cause that we are going to fight, and are now fighting this very moment, side by side.

In that cause we shall surely conquer, and our children will look back to this fateful date as the one day from which democracies can feel secure that their progress, their civilization, their rivalry, if need be, will be conducted, not on German lines, but in that friendly and Christian spirit which really befits the age in which we live.

Mr. Speaker, ladies and gentlemen, I beg most sincerely to repeat again how heartily I thank you for the cordial welcome which you have given us today, and to repeat my profound sense of the significance of this unique meeting.

THE RUSSIAN SITUATION AND ITS SIGNIFICANCE TO AMERICA

By Stanley Washburn

NOW that America has entered the world war and, in spirit if not by treaty, has become one of the Allies who are engaged in this incomparable conflict for the idea of world democracy, it becomes of fundamental importance that we, as a people, realize, and at once, the factors in this war with which and through which we must work in order that by our united effort we may consummate the sacrifice of blood and treasure by the achievement of an enduring peace in Europe and throughout the world.

Of France, our traditional friend, we know much. Our realization of what England has done in the war is, for the first time, receiving the appreciation which is its due.

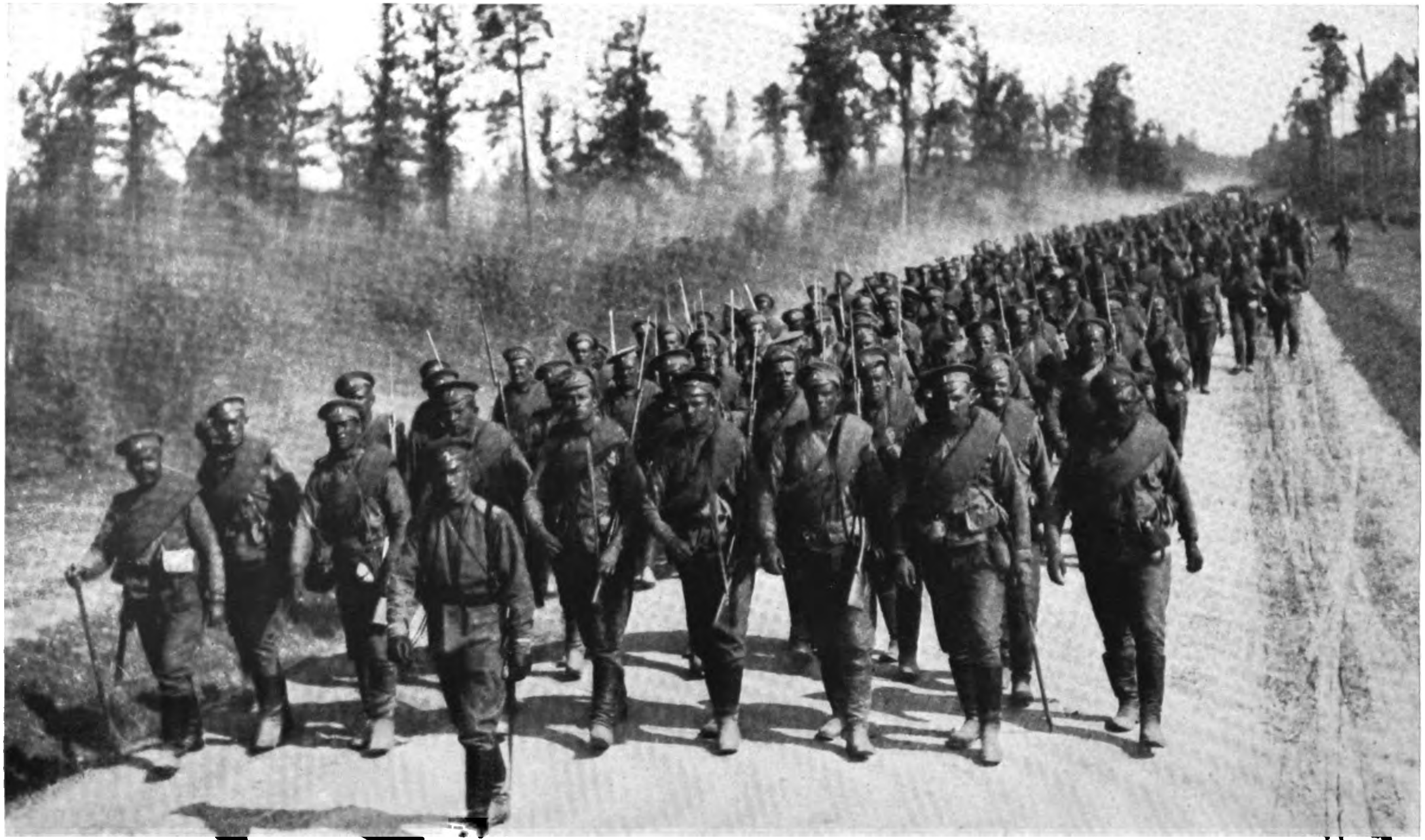
Of far and distant Russia there seems to be apparently little known in America. The world is aware in a general way that the Russians have made huge sacrifices and have been fighting an uphill battle on the far eastern front.

At this time, when we must in so large a measure depend on the coöperation and assistance of the great Republic, it is important that it should be realized exactly what Russia has contributed to the war and what her remaining in the war until the end means to the Allies, and to America in particular. For this reason I wish to trace briefly Russia's part in this conflict and what it has represented.

To understand the almost insurmountable handicaps under which the Russians have been laboring, it is necessary to appreciate the nature and importance of the German influence in Russia, which for the last few decades has become such a vital menace to the independence of the Russian people.

TEUTON INFLUENCES IN RUSSIA

After the Franco-Prussian War, when the new economic and industrial era began to develop in the Teuton Empire, it was but natural that the Germans should look to Russia for their most important



Photograph by George H. Mewes

RUSSIAN TROOPS GOING TO THE FRONT: SUPPORTS FOR THE IMPERIAL GUARDS BEING HURRIED INTO THE FIGHTING LINE market. At first this outlet for their trade was a luxury to their economic development, but as, to a greater and greater extent, their trade became committed to this vast territory it became more and more of an economic necessity that they retain and increase their grip on Russia.

The northern or Baltic provinces of Russia are very largely populated by persons of German blood who have for many generations been Russian subjects. It is natural that these people, in a measure, should feel and understand German aspirations and aid and abet in their plans where possible.

By this I do not mean to assert that all Baltic Russians are pro-German, for some of the ablest and most loyal men and devoted troops have come from this part of Russia; but it is true that many of the worst influences have also been of Baltic province extraction. For ten years before the war we can trace the German influence moving through every specious channel of intrigue and malevolent activity to gain ascendency in the internal policies of the Russian Government.

GERMANS OPPOSE A LIBERAL RUSSIA

There is little reason to doubt that the German influence has aimed in every way to check the growth of liberalism in Russia. There are many who believe that but for the German influence there would have come the abolition of vodka five years before the war. The elimination of this curse would have meant education, and with education inevitably must have come a demand for a more liberal government and a ministry responsible to the Duma.

Alone the Germans could not have hoped to exert this influence; but we find in Russia another group, commonly known as the bureaucracy, who had a community of interests with the Teutons. The bureaucracy represents the officeholders and officials appointed by the Throne, who have for generations, and one might almost say for centuries, preyed upon the resources of the Russian Empire, which, unchecked, have flown irresponsively through a small group of public buildings in the Russian capital.

There has been during and before the war a coöperation between these two parties, the enduring prestige of which depended on German victory and Russian defeat. It is clear that if Germany had been overwhelmingly defeated, both the pro-Germans and the bureaucrats would have lost the hold they had on the Russian Empire.

RUSSIA'S UNPREPAREDNESS

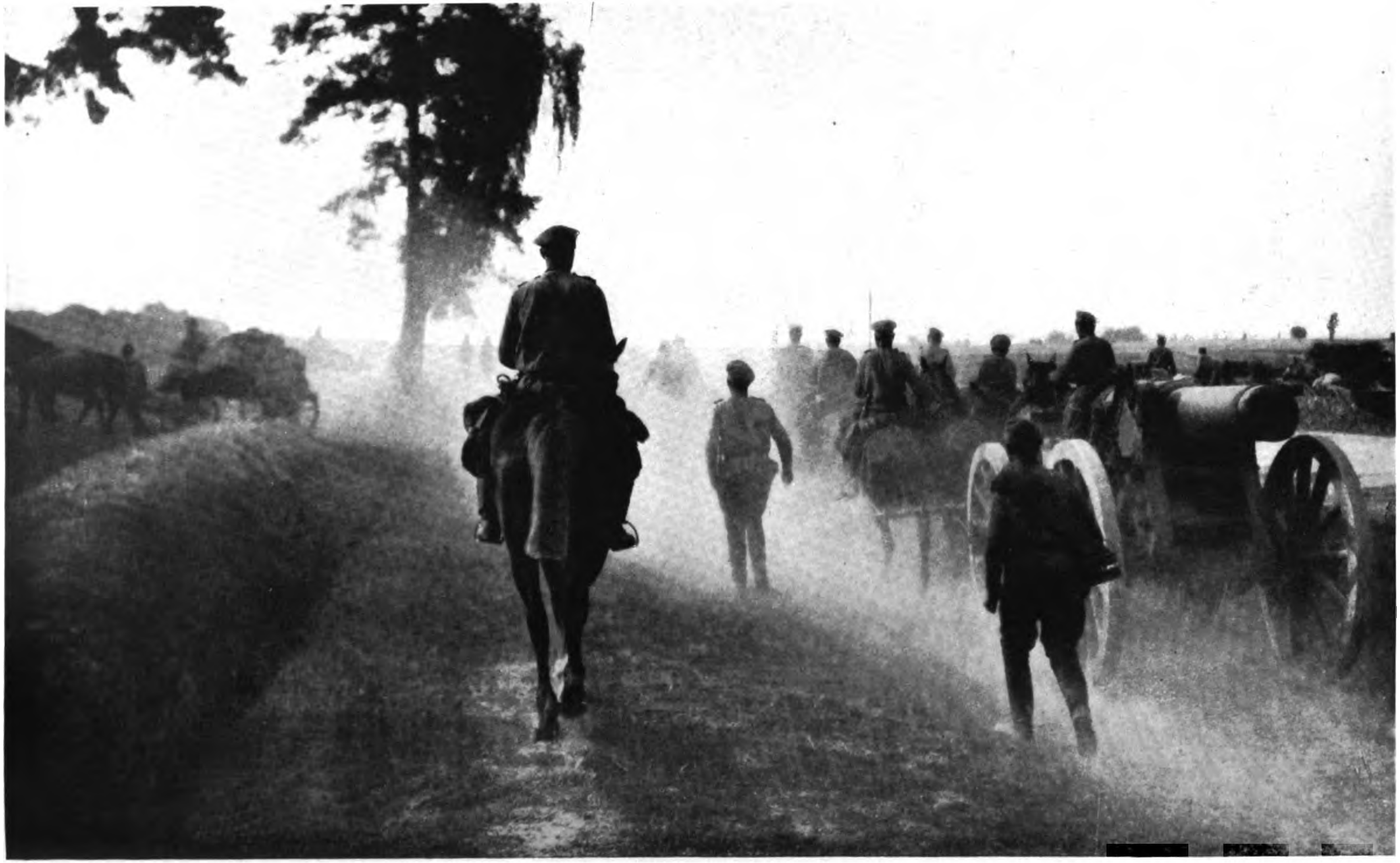
It is probably true that none of these dark forces had any great apprehension at the beginning of the war that Germany could lose; for, being well aware of Russia's unpreparedness, it seemed incredible that she could triumph over her enemy—efficient, complete, and ready for the war.

Russia owes to the Grand Duke Nicholas Nicholaievitch the salvation of the Russian cause, for during the first six months, with the absolute power delegated to him by the Tsar, he completely upset the original military program of the Russian General Staff in Petrograd and of the Minister of War, Sukomlinov, afterward removed for corruption and alleged treachery.

The original Russian program seems to have contemplated an early defensive. By a suspicious coincidence the German plan of campaign had anticipated the supposed negative campaign of the Russians and little effort had, therefore, been made for the defense of East Prussia, the greater part of German energy being directed toward the invasion of France.

The Grand Duke, loyal to the cause of the Allies and faithful to the interests of Russia, in quick response to the appeals from France, upset, almost over night, the original defensive program and launched his East Prussian campaign.

The Germans were probably taken by complete surprise as perhaps was the Russian Minister of War in Petrograd. The result of the Grand Duke's offensive in August, 1914, was to fill the Unter den Linden in Berlin with refugees fleeing panic stricken from East Prussia. It was impossible for the Kaiser to advertise, convincingly, successes in the west when



Photograph by George H. Mewes

RUSSIAN 8-INCH GUNS ADVANCING TO THE POSITIONS every day filled the streets of the capital with refugees fleeing from the east.

RUSSIA AIDS AT THE MARNE AND CALAIS

Ten days before the battle of the Marne the Germans transferred six army corps from the west to the east and Paris was saved. The Germans, utilizing to capacity their wonderful system of railroads, were able to make a concentration of troops in the east which almost annihilated the Russian army in East Prussia. The Russians accepted this disaster with extraordinary complacency on the ground that it was their contribution to the war, and that if they had saved Paris their losses were quite justified.

Later in the fall, when the Germans were making their terrific drive on Calais, in their effort to strike more directly on England, the Grand Duke again launched a new and unexpected campaign on Germany, this time advancing from his base in Warsaw and striking at the enemy from the Polish frontier. Again the Germans were obliged to divert huge bodies of troops to meet this menace of the Russian invasion. By December 1 the Russians had been driven back to the Bzura line outside of Warsaw. It is true that they had suffered reverses, but it had taken sixteen German army corps to drive them back, and Calais was saved!

In 1915, when the one cherished strategic aim of the Germans was to crush either England or France, their program was again upset, this time by the activity of the Russian armies in Galicia and the Bukovina. By the latter part of March the Russians had made such progress in the southwest as vitally to threaten the Hungarian plains, resulting in political chaos in Austria and Hungary. This became such a menace to the whole situation that the Germans were obliged to abandon whatever plans they had in the west and give their immediate attention to backing up the dual monarchy, lest it be seduced from its alliance.

DRAWS HORDES OF GERMANS FROM THE WEST

Beginning in May, the Germans began pouring their troops into Galicia, and for six months there was an unending flow of German divisions and of army corps directed against the Russian front with an extraordinary supply of munitions, while even in men the Russians were outnumbered at strategic points by two or three to one.

The Germans were able to drive through Galicia and bring about the fall of Warsaw in August, 1915. Contrary to their expectations, they were unable to bring about an independent peace, and instead of seeing the collapse of their enemy they beheld the legions of the Tsar slip from out their grasp and retire into the vast spaces of the Empire. From August until October the great retreat continued, until exhaustion and falling morale of the invader made it necessary for the Germans to dig in for the winter.

The Germans claimed that this was the appointed place that they had elected to reach for the winter, but I would state, unequivocally and without fear of contradiction, that the German advance stopped there, not because it wished to, but because it literally was unable to continue the invasion any farther. Any observer who has seen their lines as I have in many places would concur in the belief that no army would elect to spend the winter on a line which ran through forest, swamp, and plain, achieving, for the most part, no strategic asset.

RUSSIA GIVES ENGLAND AND FRANCE OPPORTUNITY TO PREPARE

The world at large looked upon 1915 as a year of Russian defeat, failing to realize that it took between thirty-five and forty corps of German troops, operating in the east, to bring about the Russian disaster. The withdrawal of these corps from the west gave England and France an opportunity to prepare after the war what lack of vision had not done before. When the Germans, in the spring of 1916, sick of their empty advances in the wastes of Russia, attacked the French at Verdun they found them prepared, and their efforts, as the world now knows, to break the French line proved abortive.

By June of 1916, when the Germans were assembling troops for some other strategic aim, Brusilloff launched his of-

Photograph by George H. Mewes

TYPICAL REFUGEES FROM THE BATTLE ZONE RELATING THEIR EXPERIENCES

fensive on the southwestern front, which continued without intermission for seventy days. The capture, during the summer and early fall, of 456,000 prisoners and nearly 500 guns so demoralized the Austrians that whatever plan the Germans may have had for that summer had to be abandoned and supports hurried to Galicia and Volynia to save again the dual monarchy from collapse.

ANOTHER FRONT FOR THE GERMANS TO FACE

This tremendous diversion of troops against the Russians last summer made it possible for the British and the French to commence their blows in the west on the Somme, operations which are still in progress.

By September 1 Germany was again beginning to accumulate a strategic reserve which might have made it possible for her to strike either on the east or west. At this moment Roumania, dazzled by Russian successes, entered the war, and the Germans, again menaced on the east, were obliged to send thirty divisions to the Balkans to drive the Russians out of Roumania. We see, then, that ever since the beginning of the war the pressure of the Russians, directly and indirectly on the east, has robbed the Germans of their strategic opportunities on the west.

Prior to the entrance of Roumania into the war the pro-German alliance in Petrograd had been viewing the situation with the gravest fear. For the first time it was beginning to see the great possibility of defeat. The Tsar, himself a well-meaning and patriotic man, was surrounded by a clique inimical to the Allies, eager to bring about a cessation of hostilities as the only means of preserving their power and prestige in Russia. The removal in the early summer of Sazanov, and every man in the foreign office known to be loyal to the Allies, provided a mechanism for negotiating an independent peace.

SCHEMERS EXPOSE THEIR OWN PLOTS

The little clique who had been engineering this enterprise had been so intent on their own interests that they utterly failed to appreciate the fact that every other faction in Russia saw and clearly realized their aims. The fall of Bucharest gave them their opportunity, but so powerful had become the Duma and the Council of the Empire that the government dared not move openly at that time.

Probably it was felt that the condition in Russia economically would be so desperate in the spring that the people would demand a cessation of the war and little intriguing would be necessary, but when spring arrived with its inevitable unrest, and the Emperor endeavored to dissolve the Duma, there came not the demand for an independent peace, but a demand for the overthrow of the government whose incompetence and double-dealing had brought about the wide-spread suffering and disorders in Russia.

The ease with which this revolution was accomplished was due entirely to the fact that every faction in Russia realized the truth as to the government, learned by thirty months of observation of incompetence and munition shortage, which had resulted in the sacrifice of millions of men at the front, and made manifest at home by the fact that in Russia more than thirteen million refugees were forced to flee for safety to the heart of the Empire because an army had not been given rifles and munitions with which to guard the Russian front.

We now approach the period of the present, when America has elected to enter the world war, and if America would realize what Russia means to this cause it must understand that the Russians at the present time are holding on their eastern front, from the Baltic to the Danube, nearly three million enemy troops, perhaps a million and a half of these being Germans.

WHAT RUSSIA'S ELIMINATION WOULD MEAN

If, by disaster at the front or by intrigue at home, Russia is forced out of the war during the coming summer, we may anticipate the early transfer of a large portion of this vast mass of men to the western front, and we will see the beginning of what in reality is an entirely new war.

We must now consider what is our duty toward ourselves and toward our Allies. The minute a nation by declaration of war engages in hostilities with an enemy nation it becomes the duty of the government and the people of that government to commence striking at that enemy with every means which is at its disposal—moral, financial, economic, and military.

If this country is to be of actual and vital assistance to the Allies who are fighting this war for world democracy and the cause of humanity against the German Government, which represents neither, the first and most essential requirement today in America is the realization on the part of the people of this country that the Germans are not on the point of collapse.

SEEDS OF DISASTER SOWN BY UNDERESTIMATING THE ENEMY

I have been in three countries at the beginning of the war—England, Russia, and Roumania—and in each of these countries the seeds of future disaster, later paid for by the sacrifice of hundreds of thousands of lives, were sown in the belief among the people that the struggle was to be of an approximately short duration, and that it would be unnecessary to exert the entire national effort to defeat the enemy. I heard many Englishmen in the early days of the war express their hesitancy in enlisting for a year's training before going to the front, because they believed the conflict would be over before they ever could reach the fighting line.

In the fall of 1914 the Russian Minister of War had almost ceased ordering ammunition, expressing the opinion that the war would be over before the time of delivery came, while in December of that first year men of highest importance in the Russian Empire labored under the belief that Austria, exhausted by her early sacrifices, was on the point of making an independent peace. Roumania, in September of 1916, believed that the war was practically over.

The result of this general misconception in England was that the mobilization of British resources did not take place until the spring of 1915 and conscription until 1916. In Russia the truth was realized only when the army ran out of supplies early in 1915, when she paid for the lack of vision of her government by the sacrifice of thousands of lives in the great retreat, while Roumania, as the world now knows, has lost three-quarters of her territory as a price for her undue optimism as to the German capacity to continue the war.

FALLACIOUS ARGUMENTS HEARD HERE

In 1917 we hear in America the same fallacious arguments that one has heard for three years in Europe, namely, that Germany is at the end of her resources, and that it is not worth while for individuals to enlist, as the chances are they will never have the opportunity to leave American shores.

The prevalence of this opinion is in reality of the greatest assistance to the Germans, and by the wide-spread belief in this we are actually making the duration of the war infinitely longer. To those who believe that the German Government is about to break on account of the reverse on the western front, I would call attention to the extraordinary psychology of the German people, which is so different from that of all other countries engaged in this war that comparison is impossible.

It is difficult for Americans to realize the discipline and lack of intellectual initiative which exists in the German army and among the German people.

Ever since he became Emperor, Wilhelm has been instilling his extraordinary beliefs into his army and into his people, until today we have a psychology in the Teuton Empire which will probably make it possible for the military autocracy to continue the war to a far greater length than would be conceivable in any other country in the world.

THE PERVERTED TEACHINGS OF THE KAISER

In the early nineties the Kaiser sounded the keynote of his own character and point of view in a speech he made to a regiment in northern Germany, when he said to them: "I would rather see my forty-five million Prussians dead on the field of battle than see one foot of the soil taken in 1870 given back to France."

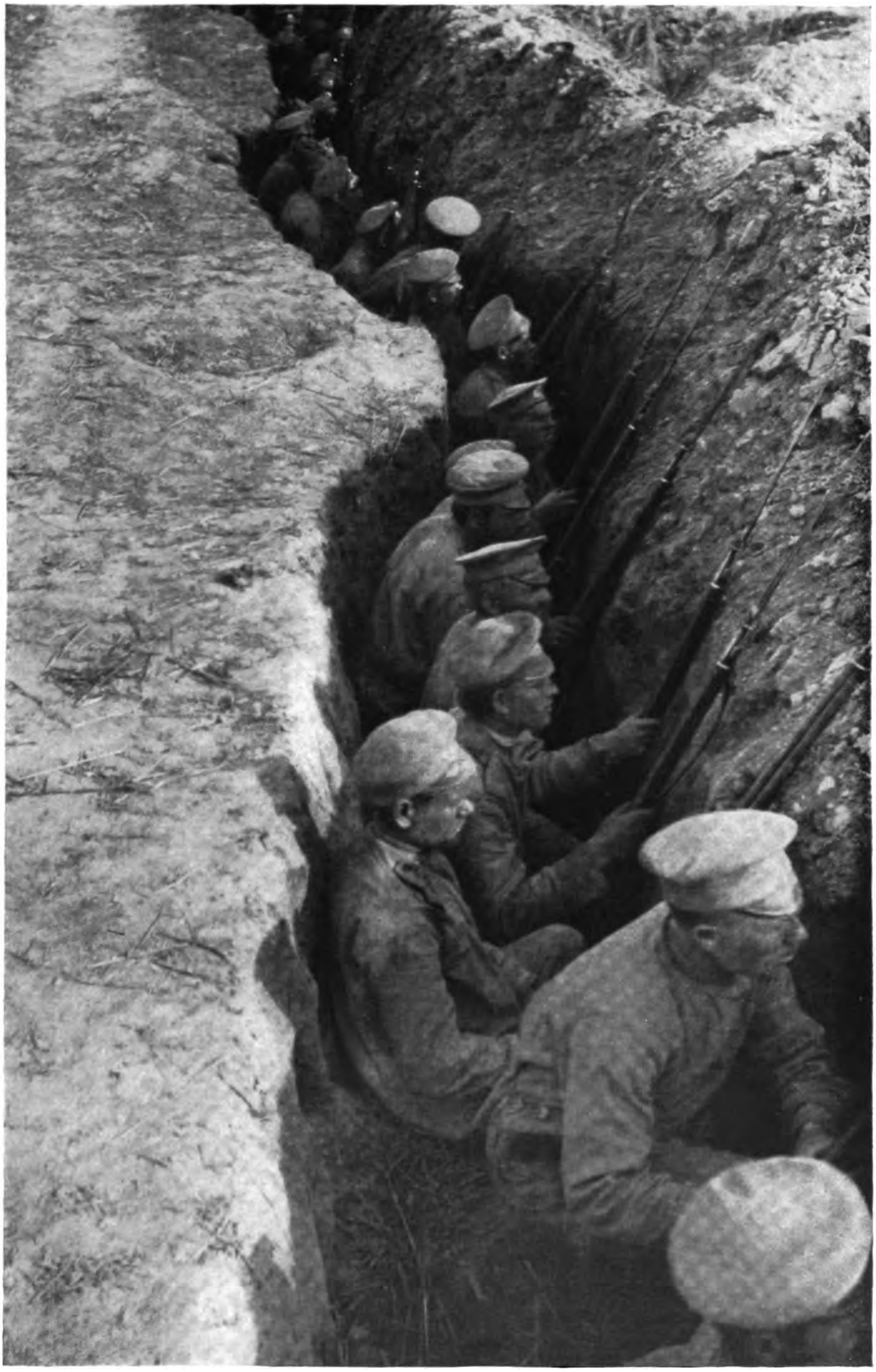
And several years later, in addressing a body of recruits in Potsdam, the Kaiser is reported to have said: "Now that you have donned my uniform it must be your pleasure and your duty to follow my wishes, realizing that I rule Germany by the direct will of God, and you must willingly obey my commands, even though I require you to shoot down your own fathers and brothers in response to my dictates."

With such ideas as these being instilled into the German army and German people year by year, we must not believe that at the first sign of reverse they will forget the teachings of forty years and demand consummation of immediate peace; and we must likewise realize that a revolution in Germany at this time has far less opportunity for success, for there is every probability that the German soldiers would fire upon their own people with the same subservience to their officers that they show in all their military operations.

THE WAR'S END NOT AT HAND

While the military operations in the west are of vast importance to the situation and must unquestionably demoralize the Germans to a certain extent, I see no reason to believe that the events of this month in France have created a condition from which we may expect any immediate results looking toward peace.

When we read that the French and English have taken 33,000 prisoners and 330 guns in the month of April, we must, of course, rejoice; but we must at the same time guard against an optimism which leads to the belief that our only



Photograph by George H. Mewes

RUSSIAN TROOPS AWAITING A GERMAN ATTACK

This is a typical rear-guard trench, characteristic of the field fortifications of the great retreat

Photograph by George H. Mewes

THE STAFF OF THE 5TH SIBERIAN CORPS

The last corps to leave Warsaw and one of the first in action on the southwestern front in the summer of 1916

duty in this war is financial and economic.

These losses of the Germans, while encouraging, are in reality but a drop in the bucket. It might be well to remember that Brusilloff, in a little over two months' operations on the southwestern front in Russia during the summer of 1916, took 450,000 prisoners and 496 guns; and yet this far greater loss to the enemy, as one now realizes, has exerted but transitory influence on the world situation.

In order fully to appreciate the Teuton strength, it is necessary to give the Germans the credit which is their due. One must, I think, consider broadly their whole point of view and realize that the power of the Central Empire, and no one at this time will question its strength, is due to the German virtues and not to the German vices.

Now that the bitterness against the Germans is so intense, it is difficult to wipe away the prejudices one feels and give them the benefit of the extraordinary values which they have as a people; but if we underestimate these virtues, we fail to understand the causes which have made it possible for the Germans to do what they have done.

WHY THE GERMAN WAR MACHINE IS STRONG

Much as I disapprove of the German point of view and of the spirit which has been manifested by the Germans of nearly all classes in this war, I still remain of the opinion that, taken from the internal point of view, our enemies possess almost every virtue which makes for military strength.

In the first place, no one who has seen and talked with the German troops can question the sincerity of their belief in the righteousness of the German cause. I have talked with prisoners from the Baltic to the Bukovina, and I have never yet met one who did not believe implicitly in the statement of the Kaiser, made at the beginning of the war, to the effect that "in the midst of perfect peace we have been treacherously surprised by a ring of enemies jealous of our genius and intent on our destruction."

THE PRUSSIAN CAPACITY FOR SACRIFICE

With this idea dominant in the German mind, and probably now accepted as a truth even by the Kaiser himself, who has come to believe implicitly in his own statements, the fallacies of which his lack of imagination has made him incapable of seeing, there has been produced in Germany a national fortitude and a capacity for sacrifice rarely equaled and never surpassed in the history of the world.

Having spent in the achievement of what they regard as their national defensive aims four and one-half million casualties gross, we need not imagine that the loss of a few hundred thousand in the west is going to exert any fundamental or far-reaching influence on the German ultimate capacity of resistance.

I believe it to be an absolute truth that if America prepares for war with the idea that this conflict is to last for three years we may expect the end of the war before 1918; but if we elect to make the same psychological mistake that the other Powers have made and cling to the belief that the war is almost over, and prepare in the belief that the Germans will be exhausted this year, it is perfectly possible that the war may last for another two years.

HOW WE MAY PROLONG THE WAR

If we raise a trifling army of half a million to a million men, it is quite possible that before this war is over we may suffer a million casualties on the western front alone; whereas if we accept the necessity of sacrifice and prepare ourselves as we would do were we fighting Germany alone and for our national existence, and formulate plans for a three-years war, involving ultimate capacity to deliver on various European fronts five million men, fully equipped and trained, it is my opinion that, with the possible exception of an expeditionary force for moral effect on the situation, none would ever reach a European front.

It must be realized at this time that a dominant feature in the world has become the visible supply of man power. The German staff has carefully analyzed the European situation, has reckoned with this visible supply in Russia, France, and England, and has, to its own satisfaction, reached the conclusion that Germany has a sporting chance of outliving her enemies in this competition of death. The staff has not, at any time, I am certain, included in its figures the possibility of five million Americans being potentially available to fill the losses of the Allies in 1918, 1919, and possibly 1920.

A WHEAT MARKET ANALOGY

In this matter of the visible supply of human material I see a direct analogy in the wheat market. If a Chicago operator contemplates a corner in May or July wheat and learns many months before that the acreage in Argentina is to be increased 200 per cent, his plans are affected and defeated, not when this wheat really comes on the Chicago market, but when he receives information of the contemplated acreage in distant fields of production.

Thus the price of wheat in other ruling markets is affected even before a seed is planted. And so, I believe, it is with this military situation. If our plans contemplate the raising of an army of five million men within a certain period, the Germans feel the military and moral effect before we have enlisted the men; for it means that a staff already desperately pressed to provide men for this year's campaign must extend its vision to contemplate the possibility of raising in 1918, for delivery at the same time and place, approximately an equivalent number of troops as contemplated in our military program.

THIS YEAR OR NEVER WITH THE GERMANS

The realization of this potential situation must convince the enemy that what they cannot accomplish during this summer they can never accomplish, and the necessity of peace late in the fall or early winter must be apparent to even the frozen imagination of the German people. It is for this reason that I believe our second fundamental duty is the adoption of a military program on the basis of three years of war.

The third fundamental and, in my opinion, the most necessary action which this country should take is that which our President and government are already taking in the support of the new provisional government in Russia. Inasmuch as we cannot at present strike the enemy with any military force of our own, we must strike by assisting, to the greatest extent possible, that member of the Allies who is in the greatest need of assistance.

It must be evident now that the Germans have lost for the present the possibility of achieving any objective in the west which might bring them peace. It is clear, then, that they must turn their minds toward the adjustment of peace with Russia; for, if this end can be obtained, between two and three million available troops would be released for operations in the west, and an access to food supplies and raw materials in Russia would largely neutralize the effectiveness of the British blockade and give the Germans the capacity to fight indefinitely.

DANGERS OF A TEUTON DRIVE ON PETROGRAD

While I am not a pessimist as to the situation in Russia, I am certainly of the opinion that it is more than a military possibility for the Germans to take Petrograd between now and the first of September.

Were they to do this, they would strike a terrific moral blow at the Empire and an equally heavy economic one by the capture of the greatest munition and manufacturing base in Russia. At the same time they would isolate the Russian fleet in the Baltic and threaten potentially the lines of communication between England and Russia, throwing a terrific burden on the Trans-Siberian Railroad.

There is no question but that the present provisional government in Russia is composed of the most far-seeing and patriotic men of the nation. Perhaps no revolution in history has produced a finer group of patriots than this Russian twelve; but we in America must not expect the impossible, even from these distinguished and highly intelligent gentlemen.

In the face of military disaster, the possibility of which we must recognize, and the loss of the capital, whose security we must not too certainly depend upon, and with the ammunition and supplies from the outside threatened, if not cut off, we must discount the possibility of an extremely dangerous situation in the east during the coming summer.

We must always count on German intrigue exerting malevolent influence in Russia whenever the news from the front is in the least bit pessimistic. It is for the reason mentioned above that I believe our President has shown great wisdom and foresight in giving his immediate attention to the Russian situation in preference to any other of the Allies at the present time.

NO DOUBT AS TO THE WAR'S OUTCOME

As to the ultimate outcome of the war there is, of course, not the slightest doubt in my mind, nor has there ever been. The only danger was as to whether or not Germany's material preparations would be able to crush the Allies before the character of their people had had time to crystallize and prepare itself first for defense and then for offensive operations.

With nations as with individuals, it is character that is the ultimate test. Forty-two centimeter guns are worn out, munitions are shot away, and food supplies are eaten up, but the moral character of the people remains the one enduring asset which makes sacrifice possible and victory assured.

The American Revolution was won, not at Yorktown, but at Lexington, when it became apparent for the first time what was the fiber of the American people; and so this war was won when it became evident that the people of France, of England, and of Russia preferred sacrifice and death to defeat.

That all these sacrifices are justified those who have followed the situation closely cannot doubt.

I am personally of the opinion that an enduring moral idea is the greatest inheritance which one generation can leave to its successor.

The establishment of the democratic idea, based on morals, ethics, equity, and justice, which must come from this war, is worth, not a million or ten million casualties, but fifty million, if from this struggle there emerge an enduring conception as to the fundamental basis on which society, progress, and civilization must rest in perpetuity.

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THE NATIONAL GEOGRAPHIC MAGAZINE

ON THE MONASTIR ROAD

By Herbert Corey

THE story of Macedonia today is the story of the Monastir road. Along this highway Alexander and Xerxes and Galerius once tramped with their legions. It has been the link between the Adriatic and the Ægean seas ever since history was written.

For centuries it has carried its ox-carts with their solid wooden wheels, and long trains of donkeys and peasant women bowed under packs. Serb and Bulgarian raiders have descended on Saloniki along it. For thirty centuries fighting men and peasants and thieves and slaves have marched through its bottomless mud.

Today it is kaleidoscopic as it could never have been in the worst days of its bad history. To the ox-carts and donkeys have been added great camions and whirling cars filled with officers in furs and gold. Natty Frenchmen in horizon blue, Englishmen in khaki, Italians in gray green, Russians in brown, Serbian soldiers in weather-washed gray, bead its surface. Fezzed Turks are there and Albanians in white embroidered with black, and Cretans in kilts and tights and tasseled shoes.

COLOR AND MOVEMENT FILL THE ROAD TODAY

Airmen, so wrapped in furs that they remind one of toy bears, dash by in cars that are always straining for the limit of speed. Arabs, perched high on their little gray horses, direct trains of the blue carts of the French army. Gaudy Sicilian carts with Biblical scenes painted on their sideboards are dragged through the mire.

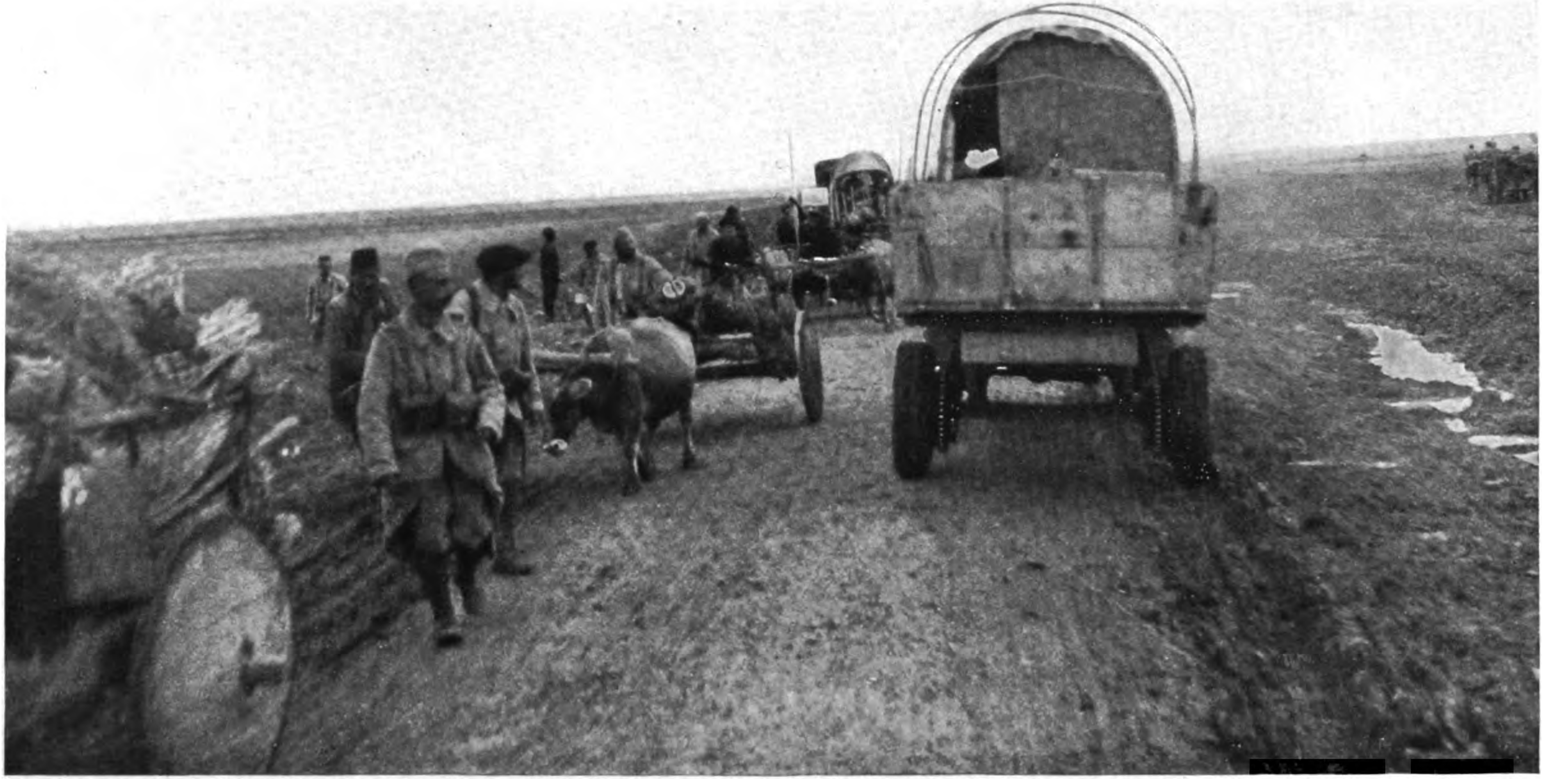
Senegalese soldiers, incredibly black, watch with an air of comical bewilderment the erratic ventures of donkeys that seem to have been put under pack for the first time. Indo-Chinese soldiers in pagoda-shaped hats, tipped with brass, putter about at mysterious tasks. Blackish-brown men from Madagascar carry burdens. Moroccans in yellowish brown swing by under shrapnel helmets.

SOLDIERS OF ALLIES TREAD HISTORIC GROUND

New levies marching toward the front, the sweat beads standing out on their pale foreheads as they struggle under their 60-pound packs, give the road to the veterans of six months' service—hard, capable, tireless. Overhead the fliers purr on the lookout for the enemy. Big guns lumber along behind caterpillar tractors. Ammunition dumps line the road and hospitals dot it. Girl nurses from France and the United States and all the British Empire ride over it.

Always the ambulances are there. They are always given the road. The men who turn out for them anticipate the day when, in their turn, they will be riding in a Red Cross car toward Saloniki and home.

At the farther end of the road is Monastir, taken last winter by the Allied forces in a battle that in any other war would have been set down as great. At



Photograph by Herbert Corey

SCENE ON THE MONASTIR ROAD

Showing the ox-carts, which are the final dependence of the transportation department on these muddy roads, pulling to one side for the French camion, which offers express speed in fine weather the sea end of the road is Saloniki, the Allied base, where Cicero lived for a time and St. Paul shook the dust from off his feet as a testimony against the Thessalonians of his day, and where Suleiman the Magnificent built the White Tower, in whose oubliettes bones still moulder of the victims of 500 years of Turkish rule.

At right angles to that road, as though they were the bent bow of which the road is the arrow, are half a million fighting men of the Allied forces. Not many in this conflict, perhaps. Macedonia is rarely mentioned in the communiques. Yet the British did not employ so many men in South Africa during the whole Boer War. In one day I have counted the uniforms of twenty fighting peoples on the road.

Campaigning in Macedonia differs for the correspondent from campaigning elsewhere. In the greater armies in the greater fields a correspondent is cared for, guarded, watched, night herded. Everything is provided for him except his uniform and his wrist watch. He rides out in fast cars; he is taken to high hills from which to watch the distant action; he sleeps in hotels of differing degrees of excellence.

In Macedonia he first secures credentials permitting him to visit the Allied armies; then he buys an outfit — tent, cooking pots, blankets, water bucket—all complete; headquarters gives him an orderly, and he takes to the road. Things begin to happen.

WANDERING IN MACEDONIA HAS A SPORTING FLAVOR

I found myself occupying a position somewhere between that of an honored guest and a hobo. Although permission was given me to visit the other units, I was formally attached to the Serbian army. The Serbs would be the most generous hosts in the world if they could be, but they have so little. They are the poor relations of the Allies. They are armed with the old St. Etienne rifle which the French discarded. The artillery in support has been cast from other fronts. Their surgeons are borrowed surgeons, for the most part.

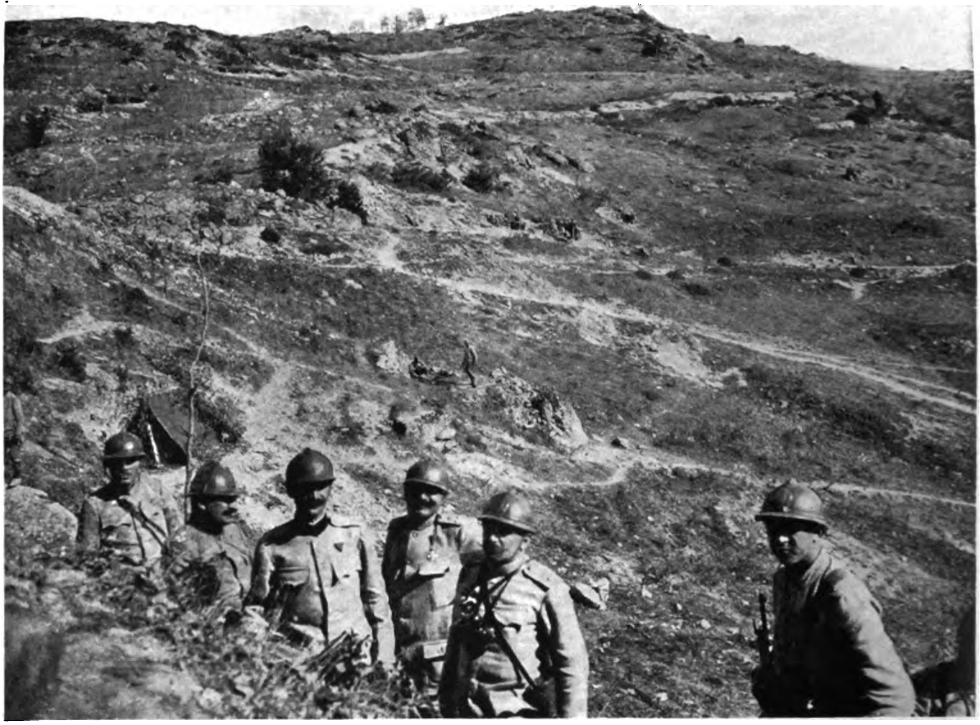
They are uniformed and fed by the French and Great Britain loans them money. They never have enough cars, even for staff use. Sometimes they have not enough food. But they always have enough ammunition and they find enough fighting for themselves. Doubtless I am influenced by my affection for the Serbs. Later I shall tell why I think this army is today—what little there is left of it—the most efficient fighting force in the war.

There were moments when I found myself at the right hand of a general, dazed by the earnestness with which some officer was responding to the toast "America." That same night I might be traveling by freight train to another point of the front. If I was very lucky the orderly found an empty box car. In it he would erect the camp cot and provide canned food and candles and reading matter and then go away to tell his mates in the next car of the eccentricities of the foreign Guspodin.

HEROISM OF SERBS IN 1916 CAMPAIGN

If it was raining—it usually was raining—it ordinarily fell to my lot to ride on a flat car. Sometimes I crouched under a canvassed gun on its way to the front. It was no drier under that gun. It did not even seem drier. But the silent guardsmen gave me the place as the place of honor. It was the one courtesy in their power to show.

Last winter's campaign of the Serbian army was one of the most heroic on any front in this war. I do not mean to compare the Serb with his allies to the disadvantage of the latter. He was at all times loyally supported. If it was the generalship of Voivode Mischitch and the incomparable courage and endurance of his men that directly resulted in the capture of Monastir, this could not have been accomplished except for the frontal attack by the French through the plains of Monastir or the bulldogging by the British of Turk and Bulgarian in the swamps of the Struma and the wet trenches of the Vardar. But it is only fitting that what the Serb has done should be made known. Let us go back a little.



Photograph by Herbert Corey

SERB SOLDIERS WEARING FRENCH TRENCH HELMETS MAKING THEIR WAY UP A PATH ON DOBRAPOLYA MOUNTAIN

In the background are the lines of trenches, while the roads leading to the valley are shown in the middle distance

The Serbian army began the great retreat of 1915 250,000 strong. Not more than 150,000 reached asylum on the island of Corfu after the winter's fight through the snow-filled passes of Albania and Montenegro. In the confusion of those days some one had forgotten. There was not sufficient food or clothing or medicines or nursing waiting them. Men who had struggled through the winter died on the open beaches of the island of Vido.

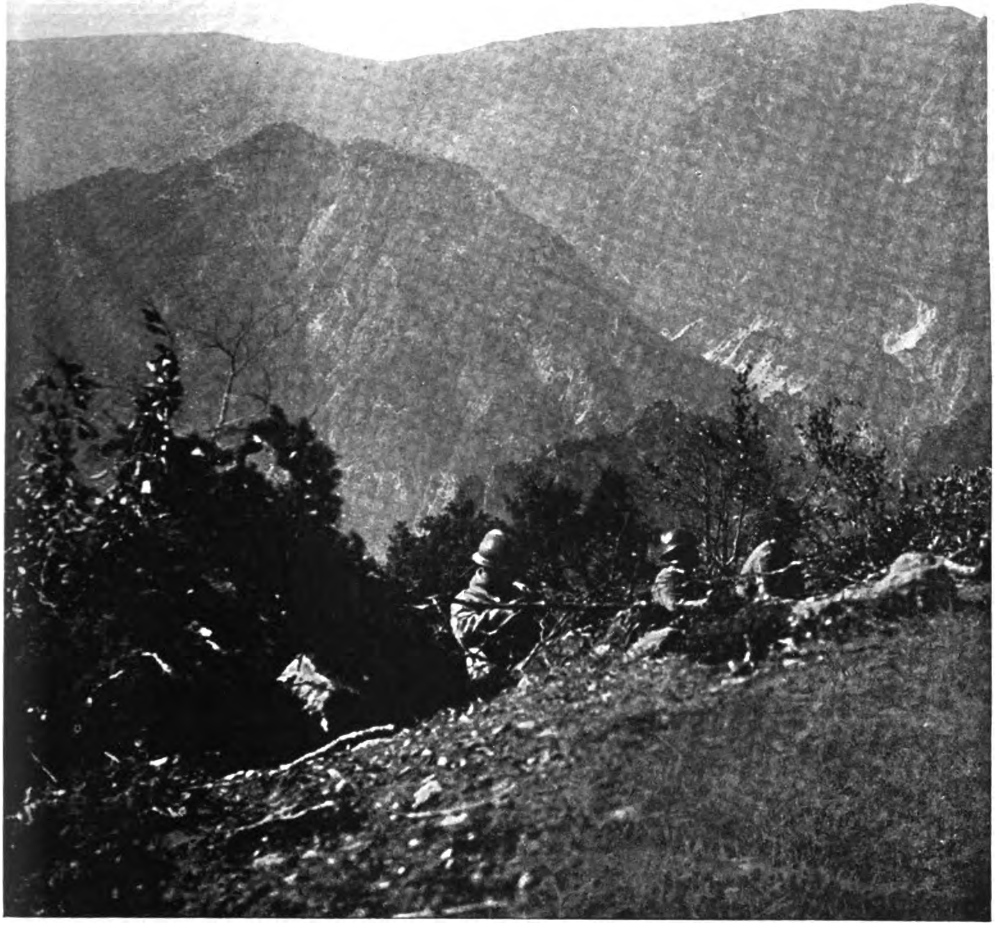
Dying men dug their own graves and then dug the graves of the men already dead. Not more than half were fit to serve again when the fall campaign of 1916 began.

AN ARMY OF OLD MEN IN THE FIGHTING LINE

It was a sad army—a bitter army—but not a despairing army that I accompanied last winter. Many of these men were "cheechas," in the Serb phrase. When a man reaches the age of forty he becomes "uncle" to his neighbors. Some of these men were in the fourth line before the war.

Serbia to the Serb peasant means the little white cottage, the plum orchard, the ten acres of ground. Few of them had been fifty miles away from home when war began five years ago in the Balkans. Fewer have seen their homes since. They have received no news from their wives and families, for the Austro-Bulgarian censorship has been extremely severe. They had seen their comrades die. Most of them—three men out of five in some units—had been wounded at some time during the war.

There were no songs upon the march except during those vivid days when the Bulgarians were being forced out of Monastir. There was no light-hearted talk about the camp fires. There was no music, except that now and then one heard the weird and complaining tones of a one-stringed fiddle which some patient soldier had made out of the material



Photograph by Herbert Corey

WHERE NATURE MAY BE EITHER ALLY OR ENEMY

The picture gives an excellent idea of the country through which the Serbian army forced the Bulgarians during the drive at Monastir. The mountain in the distance is Sokol.

at hand. They kept to themselves or in little groups of twos and threes. At night scores of tiny fires would sparkle in the open land on either side of the Monastir road, where the paired comrades were cooking their evening meal. They marched badly, slowly, slouching, their old shoulders bowed under their packs, their grizzled faces deeply lined. Yet these men were the cutting edge of the weapon that bent back the Bulgarian lines.

One division—the Morava—remained in the aggressive for 95 days without rest. During that period they had but one trench—the front trench. They had no second line, no reserve, no rest camp.

One regiment of the Choumadia division lost 1,100 out of 1,400 men in taking Vetternik Mountain, and then held that mountain under fire from the Rock of Blood, which dominated the summit, for 20 days until relief came. Even then the men of the regiment which had been so nearly wiped out did not go to rest. They stayed on Vetternik.

In the taking of Kaymakchalan half of some organizations were killed outright. They were enabled to do these things partly because of the experience

Photograph by Herbert Corey

MACEDONIAN TYPES AT SOUBOTSKO ON A MARKET DAY

"But there is always something at hand which marks this land as the East. . . . It may be a cynical and discontented peasant in a town that has escaped injury."

gained in five years of almost constant fighting. Another factor was the spirit of the men. They no longer hoped for anything for themselves. They expected to die. Those who still remain expect to be killed in action. But they intend that the bill of Serbia shall be paid.

If one could forget the foreground, a Macedonian winter landscape would remind one of Wyoming or Montana. There are the same brown, shallow swells with patches of scrubby brush. There are the same washed-out ravines, the same distant hills clothed with dark wood, while here and there a great bare eminence thrusts upward. Shepherds herd their sheep within sound of the guns. Women wash their clothes at the river side, and do not even look up when the infantry tramp by on the Monastir road. Little black, galloping figures might be cowboys if the glasses did not prove them to be uniformed men.

But there is always something at hand which marks this land as of the east. It may be a Turkish drinking fountain through whose old pipes the water still trickles. Perhaps it is a Turkish graveyard — neglected, weedgrown — among whose tumbled stones the cattle graze. It may be a cynical and discontented peasant in one of the towns that has escaped injury.

"Neither Bulgar nor Serb," said one such old woman, defiantly, when we left the Monastir road at Dobraveni. "I am Macedonian only and I am sick of war."

MASTERLESS DOGS ROAM THE BARREN HILLS

And everywhere are the dogs. In this country of shepherds every peasant's cottage has a moving fringe of dogs. In the East the dog is neither fed nor petted, so that he feels himself outcast and despised. During this war first one army and then the other has swept over northern Macedonia, driving the peasants before them. The dogs have been left behind. At night one hears them howling on the desolate hills.

Photograph by Herbert Corey

A FRENCH COOK JUST OUTSIDE OF MONASTIR

Despite the fact that the Bulgarians were at the moment shelling the camp heavily, his one concern was to assume a properly martial air

The tainted breeze that comes down the valley hints at the ghastly food on which they live. By day every man shoots at every dog save the few that cling close to an inhabited cottage. They slink, coyote fashion, behind rocks. At night one hears their feet padding behind him on the lonely roads. Their eyes shine in the flare of the electric torch. Every one carries arms in Macedonia at night, not against man, but as a protection against the dogs.

The fighting here has been of an oddly personal character. On the western front war is confusing in its immensity. Hundreds of guns roar. Thousands of men advance over a front miles long. One as completely fails to comprehend in detail what is going on as though he were caught in an earthquake. Here operations are watched in the open. One crouches in an artillery observation post on the tip of a hill and watches the little gray figures go forward to the charge on the slope opposite. Sometimes they are broken, and one sees them run down hill

THE MAN WITH PEAKED CAP AND PIPE IS A NOTED SWISS CRIMINOLOGIST INVESTIGATING CONDITIONS IN THE RECAPTURED PORTION OF SERBIA AT THE REQUEST OF THE SERBIAN GOVERNMENT

Photographs by Herbert Corey

A GROUP OF ENGLISH, FRENCH, AND SERBIAN OFFICERS AT SAKULEVO, ON THE SALONIKI FRONT

Photograph by Herbert Corey

TWO WOUNDED SERBIAN SOLDIERS BEING CARRIED TO THE FIELD HOSPITAL ON A WING-TYPE MULE LITTER

Compassionate comrades are giving them a drink of water from an old Turkish fountain

again, dodging from rock to rock, hiding in the crevices of the surface.

Occasionally the drama takes on an intimate—almost a neighborly—touch. Five cold men of the Choumadia division became aware last winter that in the Bulgarian dugout just opposite their post—not 50 feet away—three fur-coated officers often met.

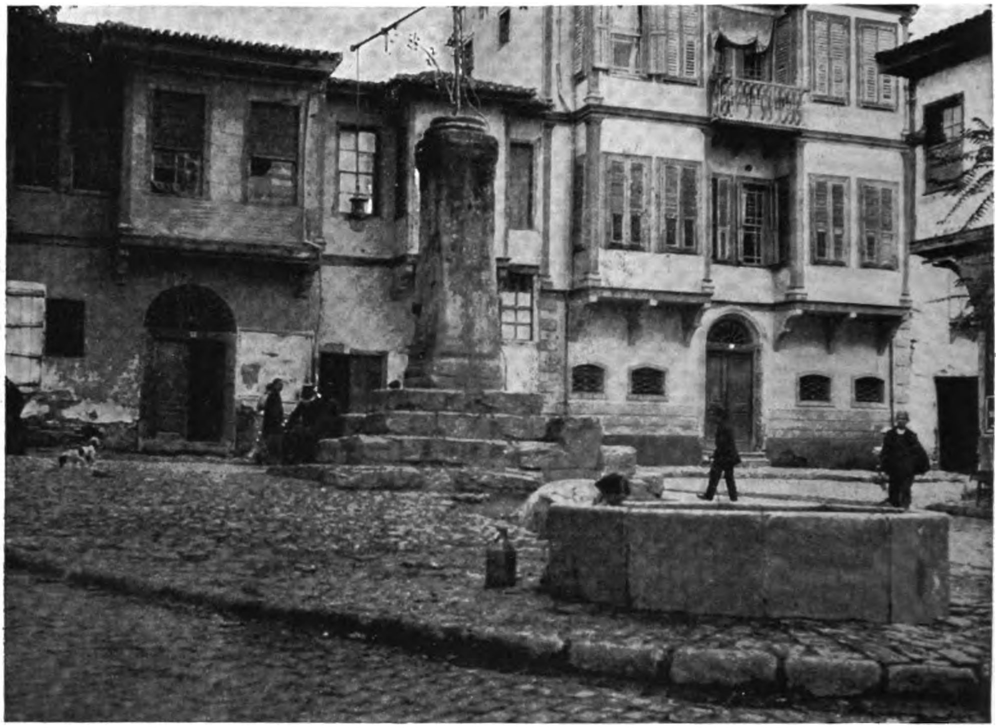
"Let us get the fur coats," said the five cold Serbs.

The story of the getting is too long to be told here. But during the two weeks in which the five cold men intrigued and maneuvered for those three fur coats their entire regiment became aware of the play and watched it as one might a particularly entertaining movie. In the end the five cold men succeeded. Lives were lost on both sides; but that is beside the point. From the colonel down the men of that regiment rejoiced over the strategy of the five cold men. For the remainder of the winter they luxuriated in fur. The bitter winds of Dobrapolyi Mountain had no terrors for them.

There was the old woman of Polok, too. Polok is hardly a hamlet. It is just a huddle of stone huts, stained by the ages, each crowned with a blackened and disheveled thatch. For weeks the Serbs attacked Chuke Mountain, in a dimple of whose shoulder Polok rests. Each day the village had been under bombardment. The artillery observers from their high posts could see the lone old woman going about her business. No other peasants were seen in Polok; but she milked her cows and drove them to water, as though peace reigned in the land. Once she was seen chasing a group of Bulgarian soldiers with a stick, as though they were a parcel of mischievous boys.

Twice the hamlet was taken in hand-to-hand fighting and lost again. The third time the Serbs held it.

The old woman picked her way down the cluttered hillside, past the dead men and the wounded, and through the shell holes and amid the ruins of the other huts, until she found the officer commanding:



Photograph by Herbert Corey

"ST. PAUL'S ROCK" IN SALONIKI

According to a local tradition that has persisted for centuries, St. Paul fulfilled in Saloniki the scriptural injunction of "shaking off the very dust from his feet" as a testimony against the Thessalonians of his day. That they took to heart his act is witnessed by this historic rock on its three-step pedestal.

"And who is to pay me for my cow?" she asked. "What have I to do with your war? I want pay for my cow that is dead."

GERMAN FLIERS WATCH THE ALLIED PLANS

Sometimes the enemy fliers visit the Monastir road. On many a pleasant day they fly over Saloniki, 100 miles distant from their lines, on missions of reconnaissance. It is desirable to know how many ships there are in the harbor, for in this way they can keep an eye upon the Allied plans.

It is not often that they drop bombs. Usually they come at the noon hour, when all leisured Saloniki is taking its coffee in front of its favorite café. No one goes to shelter; it isn't worth while. Perhaps no bombs will be dropped, and if bombs are dropped experience has told those beneath that running and dodging are futile ways in which to attempt to escape.

It is not this conviction of futility, but real indifference, however, which keeps most men and women in their seats. They are "fed up" on aëroplanes, as the British say.

Sometimes this indifference is carried to an extreme. One day I visited for the first time a hospital on the Monastir road. There were pretty girl nurses there—several of them. Next door was an ammunition dump. Further on were hangars for the war fliers. On a recent visit an enemy plane, no doubt intending to bomb the ammunition depot, had dropped bombs instead in the midst of the hospital tents.

The surgeon in charge was a practical man of forethought and reason. He had funk-holes dug all over the place—many funk-holes. No matter how unexpectedly a flier appeared, one had but to dive for the entrance of a funk-hole. It was somewhat rabbity, perhaps, but the plan was sound and safe.

"Boche coming," trilled one of the pretty nurses.

Photograph by Herbert Corey

OPEN-AIR BARBERING AT IVEN

Where one of the most noted Serbian divisions, that of the Morava, had its camp at the time. Two peasant children are watching the operation.

"To the funk-holes, girls; hurry," said the doctor.

He stood at the mouth of his individual funk-hole and waited. Like a captain whose duty it is to stand by his ship, he felt that he must see his nurses secure. They had but to get into the bottom of the funk-holes and take a half turn to the left and there they were safe—at least as safe as could be expected.

NO ONE WORRIES ABOUT BOMB DROPPERS

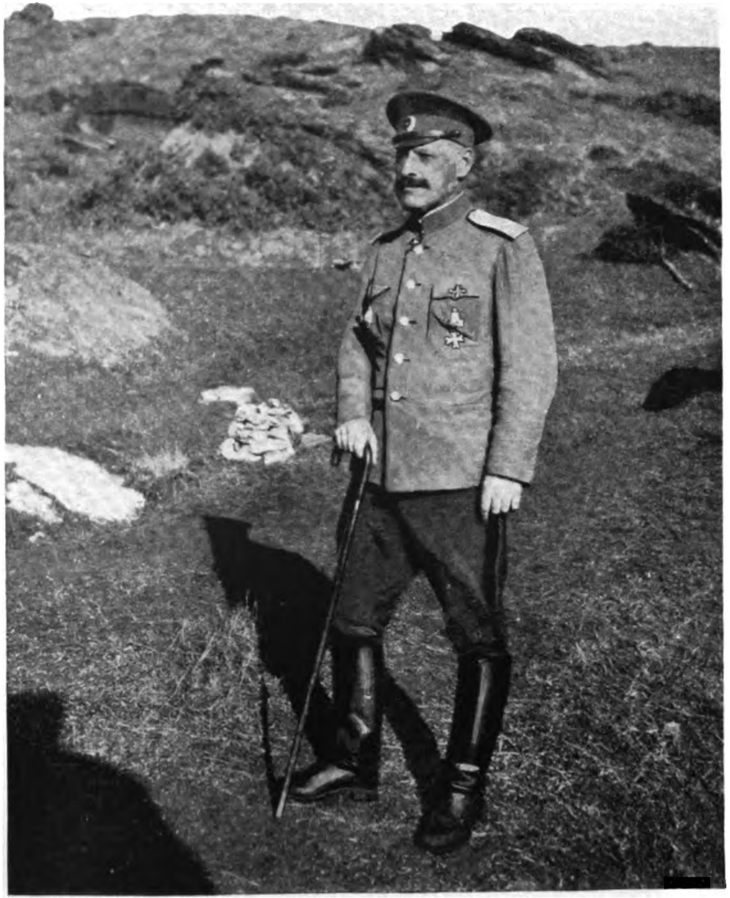
The girls ran. But instead of running to the funk-holes they ran to their tents and produced minute cameras, each having a possible range of about 40 feet. They stood there in the open and snapshotted the flier and uttered small, excited squeaks of satisfaction. The doctor did not go down into his funk-hole. He showed a regrettable lack of moral courage. I could not go either, for I was talking to the doctor.

Always the Monastir road is lined with road-menders. Some wear the dirty brown uniform and the Russian cap of the Bulgarian army. They are not particularly happy, but they are frankly at ease. Broadly speaking, the Bulgarian does not seem to know what the war is all about. If it were only to fight the Serb, he would not mind. He has always fought the Serb. He dislikes the Serb quite as cordially as the Serb detests him. But he remembers that only a little while ago he was at work, having just returned to his farm from the last war, in which he fought the Serb to his heart's content.

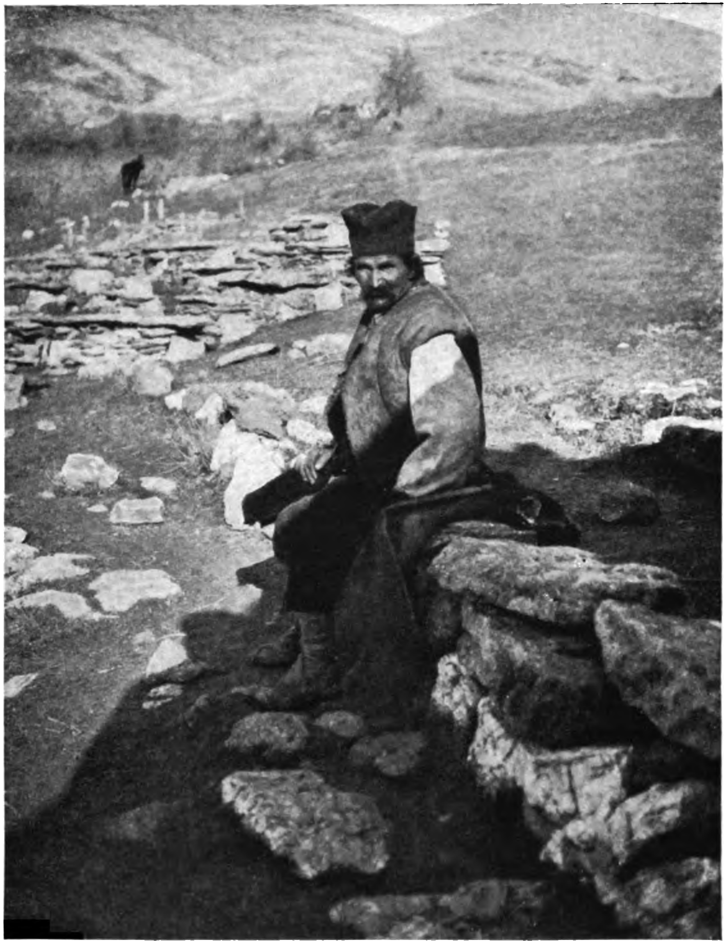
This time he was called out to fight Great Britain and Russia, countries which have always been known to the Bulgarian as his country's friends. He is puzzled and says so. Very often he is so puzzled that he deserts.

GERMANS BOSS THE ROAD MENDER OF THE MONASTIR ROAD

If there are helmeted Germans on the road, they are the gang bosses. The German is an excellent gang boss. His Bulgarian underlings are made to work much



GENERAL LEONTIEFF, AT THE MOMENT IN COMMAND OF THE FOURTH BRIGADE OF THE RUSSIAN ARMY IN MACEDONIA



Photographs by Herbert Corey

A "CHEECHA" SUNNING HIMSELF ON THE WALL, AGAINST THE TIME WHEN HE MUST RETURN TO THE TRENCH harder than when a Serbian soldier is bossing them, for it must be admitted that the Serbian sympathizes with people who do not like to work.

Driving along the roads, one finds Bulgarians asleep under bushes, stretched face down on the sand, examining their foot-gear, doing anything but work. In that case one is very apt to see a complaisant Serbian sentry sitting under a rock not far away, smoking a cigarette and quite at peace with the world. He would cheerfully kill that one of his charges who sought to escape, but he is open-minded in regard to industry.

"He just got in today," one such sentry told me, nodding at a particular contented Bulgarian who was actively killing time. "He came in from the front, thirty-five kilometers away."

The prisoner explained that he had deserted, hidden his rifle, and started out to give himself up. The whole countryside is crawling with Bulgarian prisoners, so that no one paid the least attention to him. He walked on and walked on, examining gang after gang, until he found one in which the dignity of labor was respected.

His only complaint was that after he had properly surrendered he was obliged to walk three kilometers farther, until he found an officer at Vertekopp who would receipt for him properly. He thought this formality might have been attended to by mail.

PEASANTS ARE SOURLY PHILOSOPHIC

Along with the prisoners one also finds press gangs of the peasants of the vicinity. They are heartily discontented, although they are paid for their work. One cannot wonder at their attitude. Throughout the centuries there have been wars in Macedonia, and with each war the overlordship of the peasant changed. But a little while ago he owned allegiance to the Turk. Then the Greeks took Macedonia and began to tax him. Then the Bulgars established themselves, and right on the retreating heels of his new masters came the Serbs, accompanied by a swarm of strange men wearing many uniforms and speaking in many tongues. The peasant takes refuge from his confusion in a sour philosophy.

"One year the crops fail," he says, "and the next year there is war. It is all one to the poor man."

Along the Monastir road there is a continuous, dribbling stream of refugees—not many at a time. Sometimes half a dozen will trudge by in the course of a day. Sometimes an entire village has been evacuated farther up the line, and the fifty or so who have held on to the bitter end tramp stolidly and unwillingly to safety. These poor folk never leave their homes until they have been compelled to. The outer world is a strange and hostile place to them. Perhaps not one in an hundred has ever been twenty miles away from his hamlet.

WOMEN RETURN AT NIGHT TO THEIR ABANDONED HOMES

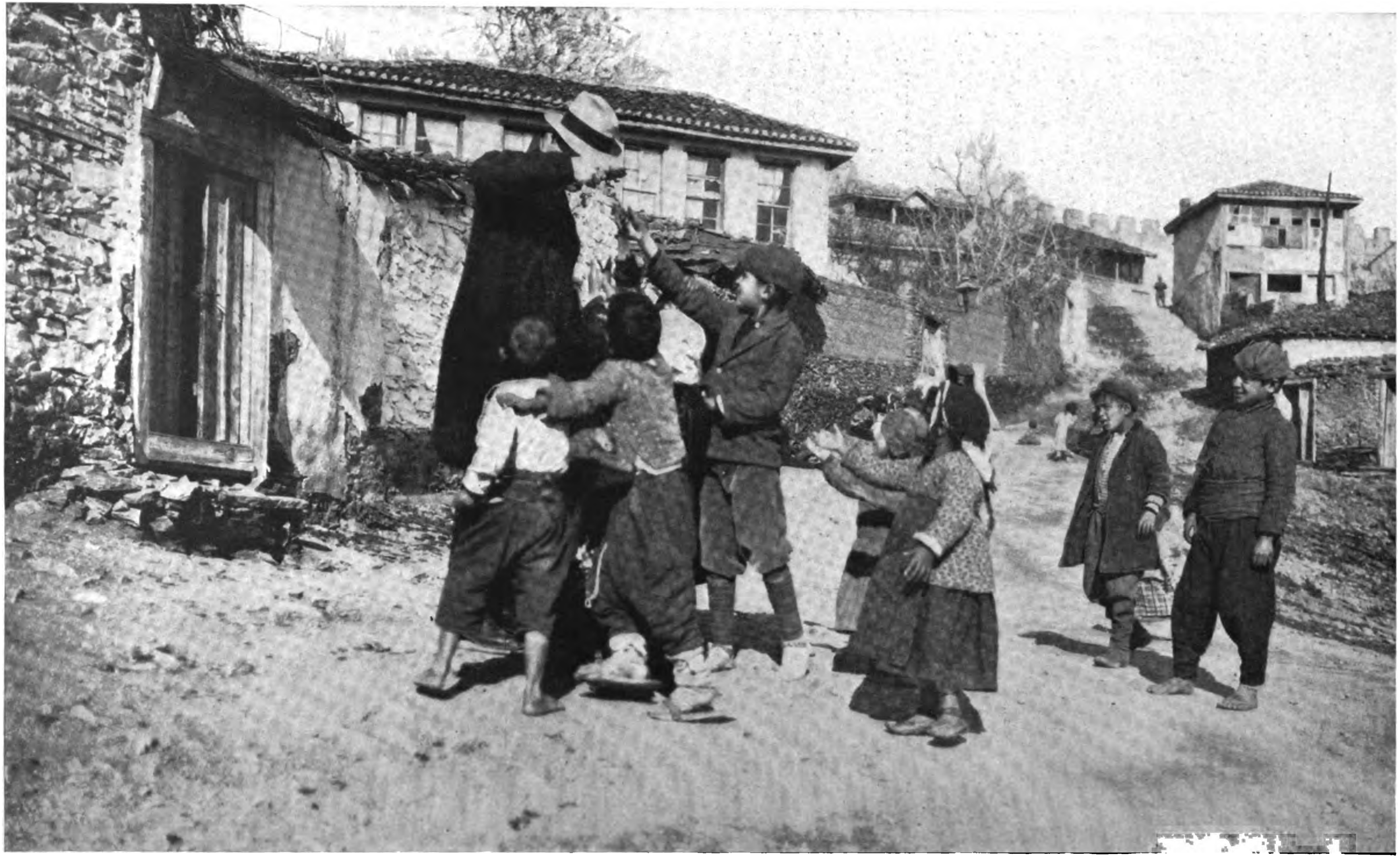
They pile their poor effects on donkeys, put the babies on top, and load the women with what there is left. If there is a spare donkey, the man of the house always rides. If there are two spare donkeys, the eldest sons ride. The women always walk. Only once did I see a man walking while his wife rode the donkey. The road buzzed with the gossip of it.

They have suffered greatly, these poor folk. Yet candor compels me to say that at first sight the difference between a Macedonian peasant evicted and a Macedonian peasant at home is so slight that it fails to arouse much sympathy. These poor folk seem to a westerner always on the edge of starvation. The principal item of their diet is maize, so poorly ground by crude water-turned wheels that their bodies are repulsively swollen from the resultant indigestion.

A man with a yoke of oxen and forty sheep is rich.

Their homes are mere inclosures of stone, topped with a blackened thatch, without windows and sometimes without other door than a blanket or a bit of flapping skin. Often the fire is lighted in the middle of the dirt floor and the smoke seeps out through the crevices of the walls and the holes in the roof. Baths seem unknown and vermin are a commonplace of their existence.

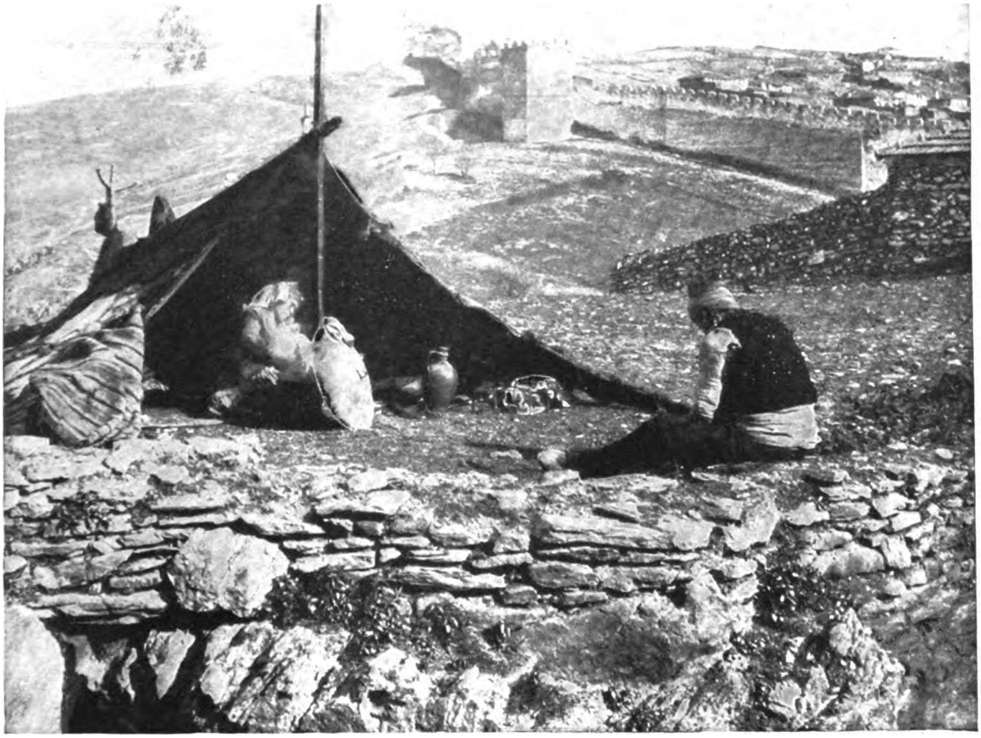
Yet they cling blindly to these hovels. When they hide themselves from an in-



Photograph by Herbert Corey

BAKSHEESH IN ABUNDANCE IN SALONIKI

There is no difficulty in getting good pictures of the kiddies in Macedonia. A penny buys one of them more happiness than a pound could bring to an over-indulged western child, so they are always wanting pennies. When the unbeliever passes their way, their accepted form of salutation is "Penny, Johnny?" and none of them is too bashful to salute.



Photograph by Herbert Corey

REFUGEE TENTS JUST OUTSIDE THE OLD CITY WALL AT SALONIKI

vader they always choose some nook in the hills from which they may watch their black roofs. They cache foodstuffs in secret places, from which they take a handful of corn or a cheese of ewe milk at night.

When they are driven out the men go silently. Sometimes they are sullen. Sometimes they smile at the soldiers in a sort of twisted, sidewise fashion, in a poor attempt at propitiation. The women follow at their heels patiently. After the first outcry against the order of eviction they never openly defy the soldiery. Yet it is the women who most flagrantly disobey.

They return at night to the abandoned homestead, taking their children with them. To do so they must evade the guards and tramp across a desolate country in the darkness, in continual danger from the prowling dogs or from the rifles of the sentries. Somehow they manage to do it. Humanity requires that these little villages in the war zone be emptied to the last human, for in the rear is food and shelter, while at the front is only starvation and danger.

Yet little by little the inhabitants trickle back. At first they are unobtrusive. Although fifty may be living in a hamlet, one sees no more than four or five at a time. Eventually they resume their former mode of life, so far as that is possible. Sometimes they live on the hidden stores of food. Sometimes it is quite impossible to discover how they live at all.

Some such thing happened at Brod.

Photograph by Herbert Corey

CHARACTERISTIC COSTUMES IN THE SALONIKI STREETS

This is a fair-sized town for the northern Macedonian country. There are perhaps 150 houses scattered on the slopes of a rocky hill or sunk in the abominable mud of the Cerna Valley. Here the Bulgarians behaved "fairly well," the peasants said. Some of the men were beaten, and some were taken away to dig trenches, and some ran away to the hills; but the town was not burned and the women were not abused. The peasants were grateful.

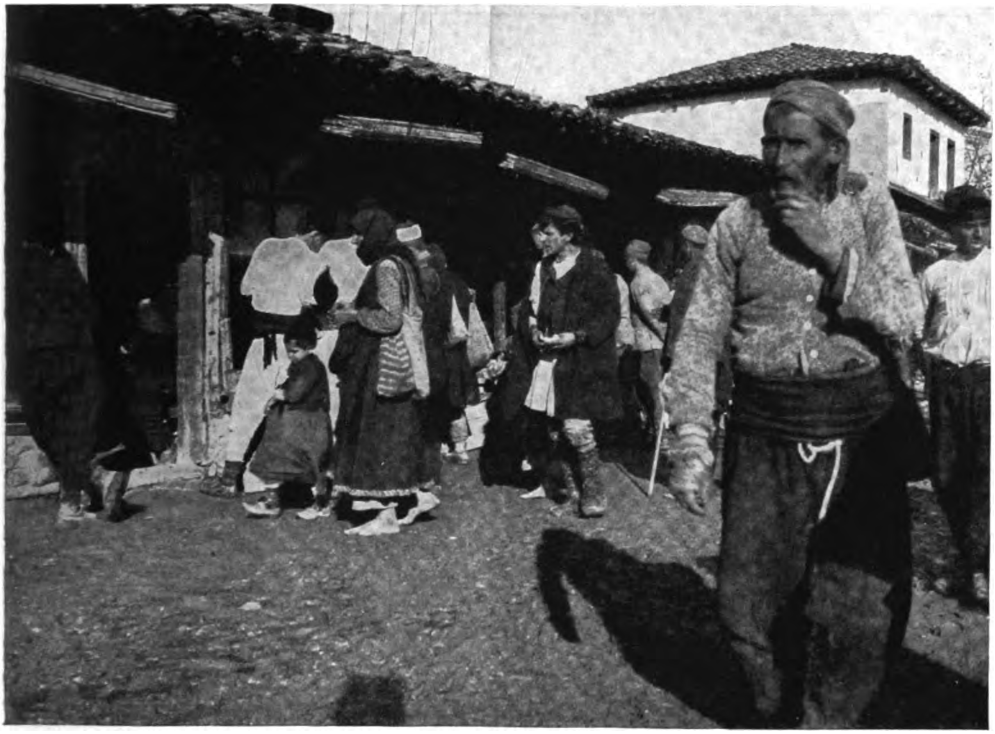
AMERICAN NURSE FED THE STARVING AT BROD

When the Serbians took the town they found several hundred of the people still there. There was no food. The village was under constant bombardment. Each Macedonian peasant is a potential spy, for lineage and allegiance are too mixed for either side to place reliance in his loyalty. The people of Brod were moved out to the last man and baby. The Serbs searched the houses one by one, and looked under the caving bank of the Cerna and hunted over the bare hillside. There was none left. The village headman swore it.

Yet a little later, when the Serbs had given place to the Italians, the mired and filthy streets of Brod suddenly became alive with children. Children were everywhere; starving children, impossibly dirty children, children that were verminous and pallid and so ragged that the snow struck against bare flesh through the holes in their garments. No men and few women were seen at this time. The Italian soldiers fed these little outcasts with the scraps of their rations. A military ration is scientifically adjusted to the needs of the soldier. There is no excess to be devoted to charity.

Miss Emily Simmonds, of the American Red Cross, relieved this situation. Miss Simmonds secured an assignment as nurse in a near-by hospital and while there learned of the children's famine at Brod. She moved in one night without a pass, without a guard, and equipped only with a small tent that was so imperfect a shelter that the constant rains rotted the mattress of her bed. She took a census of the starving ones.

By this time there were 40 women and 200 children, and there was not a bite to eat, nor a stick of fuel nor a blanket.



Photograph by Herbert Corey

A TYPICAL MARKET-DAY CROWD AT SOUBOTSKO

They lived in that defiance of natural law which seems the rule of the destitute in the Balkans. Most of the time they were starving. They slept in heaps, like animals, in order to keep from freezing.

"Send food," Miss Simmonds telegraphed, "especially beans."

PEASANT WOMEN TRIED TO CHURN CONDENSED MILK

The beans came, but nothing else. There was no salt, no meat, no anything but beans. Boiled beans become singularly unpalatable after one has lived a few days on bean *au naturel*. Yet the nurse and the refugees were thankful for beans that week. They were kept from starvation. Later on other supplies arrived. The poor women, faithful to that domestic instinct implanted in every woman's breast, made a pathetic attempt to resume housekeeping along familiar lines. But soon they came to the nurse indignant and complaining. The delegates placed before her bowls of the prepared condensed milk she had issued:

"A devil has entered it," they said with conviction. "For hours upon hours we have churned it and yet the butter will not come."

It was at Slivitska that I began to suspect that these poor devils have a sense of humor. I had gone to the townlet with a Serbian officer who was inquiring into the recent behavior of the Bulgarians. We held court in a cow stable during a pouring rain.

Outside a German prisoner wandered, asking an unintelligible question. He had lost his wits completely during the battle. He fumbled about aimlessly. Sometimes he stood opposite the open door of our cow stable, the tears on his cheeks mingling with the rain. Wounded men lay on the sopping straw.

A dozen or so compact, sturdy, cheerful little French soldiers dried their clothing at the fire which smoked on the dirt floor. A notably sullen priest stood by. A peasant told the village story.

"The Bulgarians were unkind to our father here," said he, indicating the pope. "Also they were cruel to us." The pope sneered ostentatiously. I have never seen

Photograph by Herbert Corey

AMERICAN RED CROSS MEN STANDING BY AN OLD TURKISH FOUNTAIN IN SALONIKI

Photograph by Herbert Corey

THREE GENERALS STANDING BY THE SIGNAL POST, AROUND WHICH AËRIAL OBSERVERS WERE WONT TO CIRCLE AND DROP THEIR MESSAGES

At the extreme left is General Jerome, of the French army; in the center is Voivode Mischitch, the Serbian strategist of the Macedonian campaign, and at the right is General Sicard, of the French army.

a pope who seemed on such bad terms with his parishioners. He half turned to go away. Then he turned back, as though to listen to the story.

"The Bulgarians said they would hang our pope at noon if we did not give them 200 dinars," said the peasant, impressively. It seemed to me that he did not meet the eye of the pope.

"What did you do?" asked the Serbian officer who was conducting the examination. The peasant explained that they were poor folk at Slivitska. They did not have 200 dinars. Furthermore, most of the people of Slivitska had hidden in the hills when the Bulgarians came.

"So the only thing we could do for our father," said the peasant, suavely, "was to ask the Bulgarians to postpone the event until 4 o'clock. That would give our people time to come in from the hills and see our father hanged."

Macedonian mud coupled with the Monastir road is a formidable opponent of the Allied forces here. The Monastir road, in spite of its centuries of use, is of an incredible badness. It has no bottom in wet weather. In dry weather it is but a dust-bin, so that one can trace the course of a moving column for miles by the pillar-like cloud that rises.

MAKING A BAD ROAD BEHAVE

The Allies have done what they could to make the road behave itself. But the Saloniki base is at an average distance of 100 miles from the front line, and those goods which cannot be carried upon the two single-track railroads must go by the Monastir road. The railroads are generally in an acute state of congestion.

At all times the native ox-cart is the last line of transportation defense. In bad weather the railroad bridges wash out. The little De Cauville railroads that net the hills go completely to pieces after each downpour. Their tiny tracks slip

Photograph by Herbert Corey

MISS EMILY SIMMONDS, ONE OF THE MOST NOTED NURSES OF THE AMERICAN RED CROSS, LUNCHING WITH THE TWO "CHEECHAS" WHO HAD BEEN ASSIGNED TO HER FOR A PERSONAL GUARD AT BROD

sidewise on the slopes or the soft dirt ballasting oozes out from beneath the ties.

On the big road the great motor lorries slip and strain and beat the surface into huge ruts. When a car is stranded it is pushed into the ditch by the side. The men attached to it paddle about barefooted, hopelessly, doing little things they know will do no good. They must wait for the road to come to its senses. The pack-trains abandon the road completely and strike across the open country.

OX-CARTS THE FINAL RELIANCE OF TRANSPORT DEPARTMENT

But the ox-carts groan and creak and waggle on. The little oxen sway and grunt under the goad. Progress is infinitely slow, but there is progress. In the end they reach the place appointed.

The Allied forces have built 2,000 miles of main and branch roads in Macedonia during the occupancy and dry weather conditions are slightly improved. But the loose Macedonian soil and the sandy Macedonian rock is not good road metal. When the Allies leave Macedonia and the people come back to these poor villages that are scattered through the hills, the big road will go back to that state in which Alexander put it, perhaps, or Darius found it. Until it is bettered and the roads that lead from it are made sound for traffic, there can be no permanent improvement in the internal conditions of northern Macedonia. Where Macedonia is not hilly it is a swamp. During the winter Macedonian hills defy nature and become swamps.

If the road is an irritation as well as a necessity, the malaria-bearing mosquito is a really dangerous enemy. Last year the Allied troops did not realize what the Macedonian mosquito can do, apparently. They were not prepared. In consequence fully one-half of their strength was out of action because of malaria.

During one period more men were invalided home than arrived on ships. I heard of battalions with 75 per cent of their men on their backs, and of companies in which only five men were fit for duty. The well men watched the trench while the invalids groaned in their dugouts, but the sick men responded to call when an attack was made. Even in the midst of winter one saw yellow-faced men faltering along the Monastir road toward

Photograph by Herbert Corey

THE THREE GRACES OF SALONIKI

Persistent beggars, but so adorably sunny that they were forgiven and enriched

some near-by hospital. It often took them a day to cover five miles. At night they sometimes slept in the mud, wrapped in blankets that had been soaked by the day's rain. They did not complain. What was the use?

MALARIA-BEARING MOSQUITO IS THE MOST DANGEROUS ENEMY

Conditions have improved for future campaigns. The Allies are on higher ground, for one thing. They have cut their way through the Bulgarian lines until they have reached the hills. There will be malaria, of course. There will always be malaria here until Macedonia is drained and oiled, Panama fashion. But the doctors are learning how to treat it and the equipment of prevention has become almost formidable. Men now wear mosquito gloves and masks and neck covers, and sleep in nets inside tents that have been made mosquito-safe.

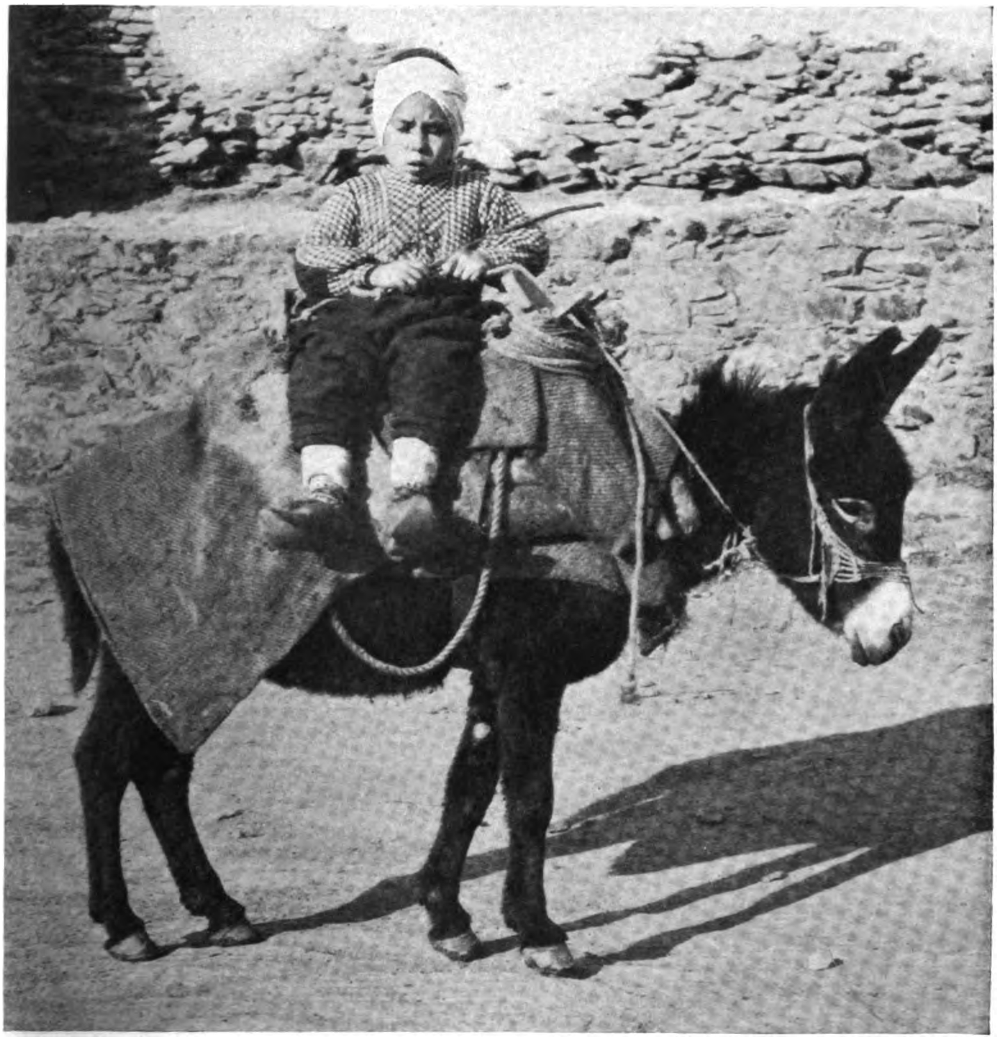
The difficulty is to make the men make use of these safeguards. They become irritable during the Macedonian heats, in which their strength is fairly drained from them. They tear off the head cov-

PEASANTS ON THE ROAD TO SAFETY

In this case their exodus had been so hurried that they had not even time to load their donkeys

Photographs by Herbert Corey

GROUP OF REFUGEE CHILDREN IN MONASTIR, SHOWING THE VARIETY OF TYPES OBSERVABLE IN THE CITY



Photograph by Herbert Corey

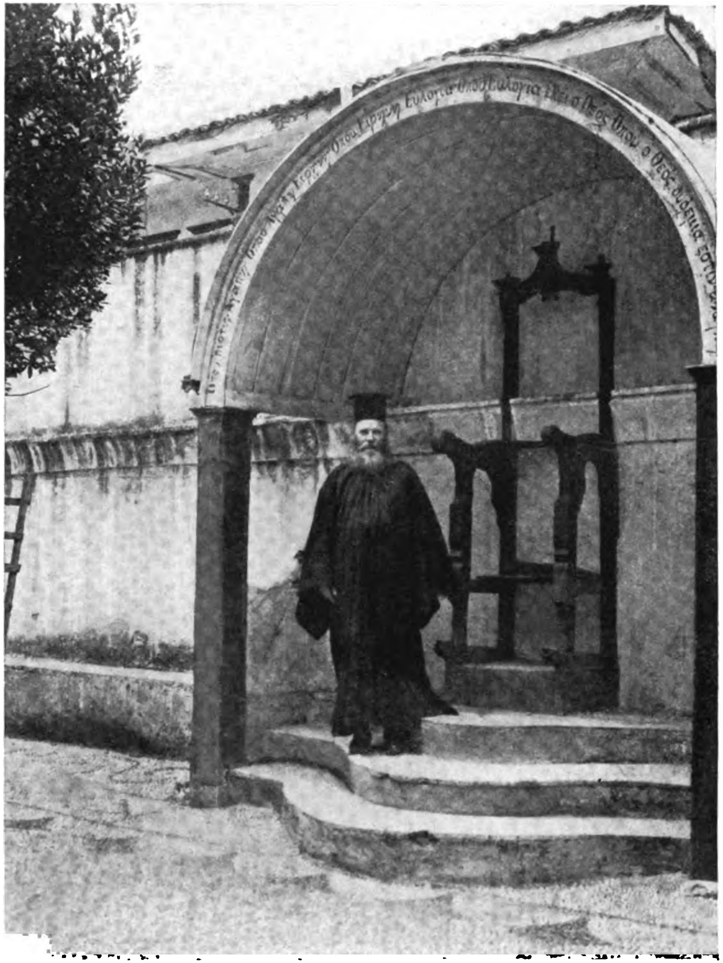
A GRAVE AND COURTEOUS LITTLE GENTLEMAN

Although his home had been burned behind him and the other members of his family had disappeared

ers to get a breath of air and draw the gloves from hands that have been bleached and thinned by the flow of perspiration. Then the mosquito does his perfect work.

Today the road ends at Monastir. True, a branch wanders north to Nish and Uskub and Prilip, and another branch crosses the hills to the Adriatic Sea. But across these branches the Bulgarian line is thrown. Monastir is a town of 40,000 people, pretty clean by eastern standards. well built, with wide streets and a tinkling river running through its handsome boulevard. It was captured by the Allies in November, 1916, but the Bulgarians held the hills from which it is commanded. They shelled it every day until the middle of April, and they may be shelling it now for aught I know.

It was even a contemptuous sort of shelling they gave it. Although they had a sufficiency of big guns, and sometimes dropped a 210 shell in the middle of a promenade to prove it, most of the firing on the town was from the field pieces of 77 caliber. They were so near at hand, you see — only four or five kilometers



Photographs by Herbert Corey

VIEWING THE DISTANT ENEMY THROUGH THE STAFF BINOCULARS ON CHUKE MOUNTAIN

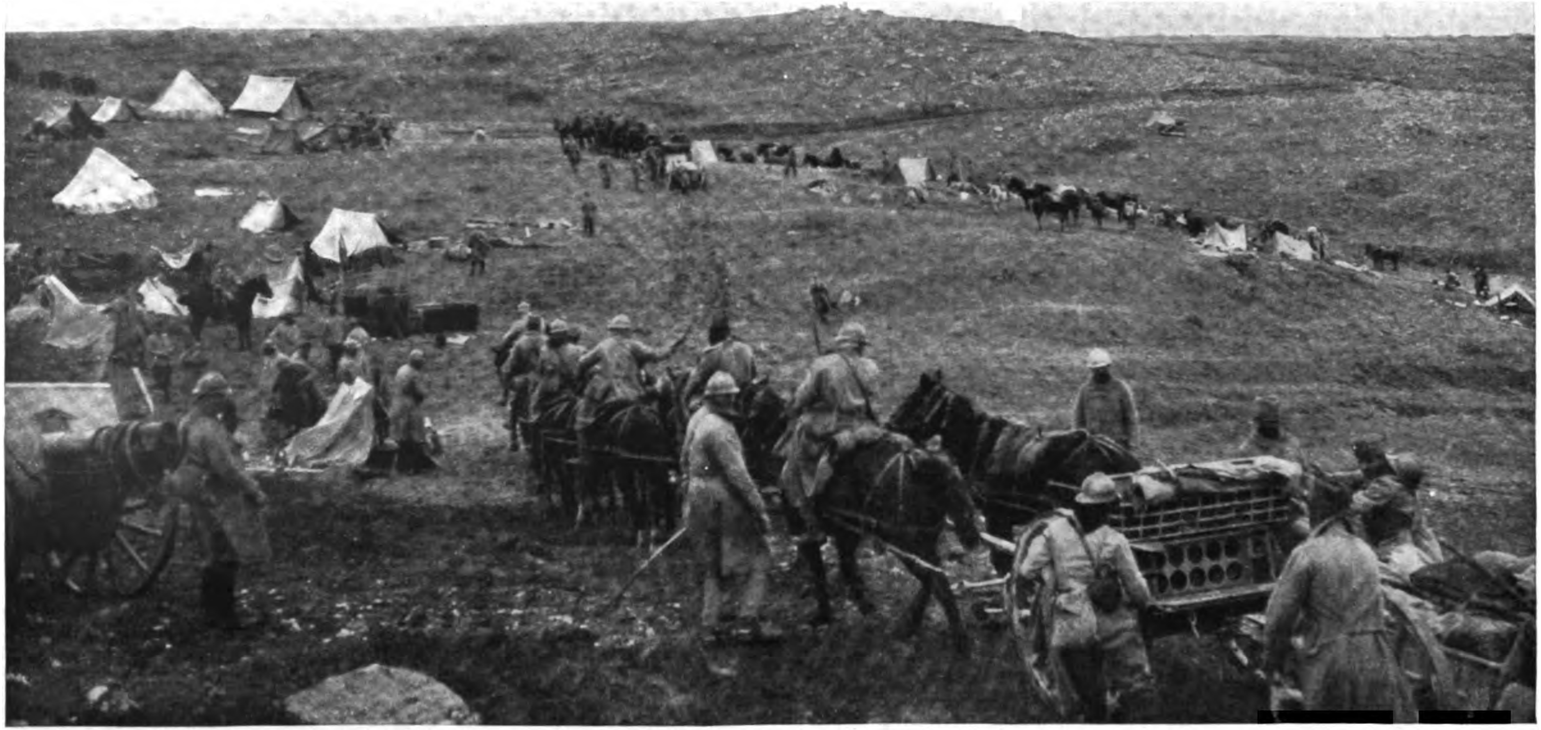
Two hours before this picture was taken the trench had been held by a German unit

A GREEK "POPE" STANDING BY THE SIDE OF THE ANCIENT CHAIR IN THE OPEN-AIR PULPIT FROM WHICH HE OCCASIONALLY READS HIS SERVICE

Photograph by Herbert Corey

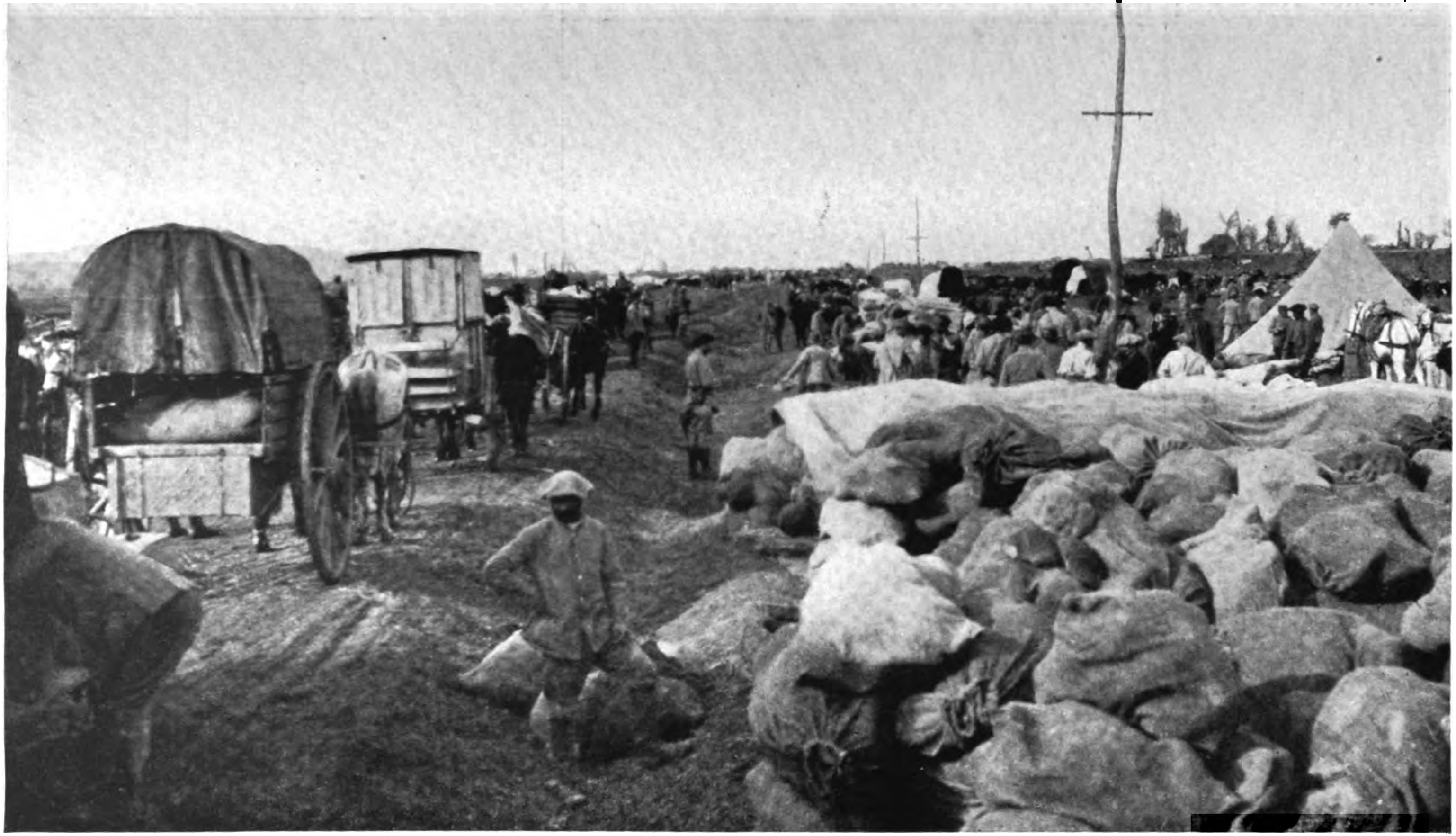
A FAMILY PARTY AT DOBRAVENI

In which the elders gave to the heads of the younger members of the gathering an attention which it is feared they needed



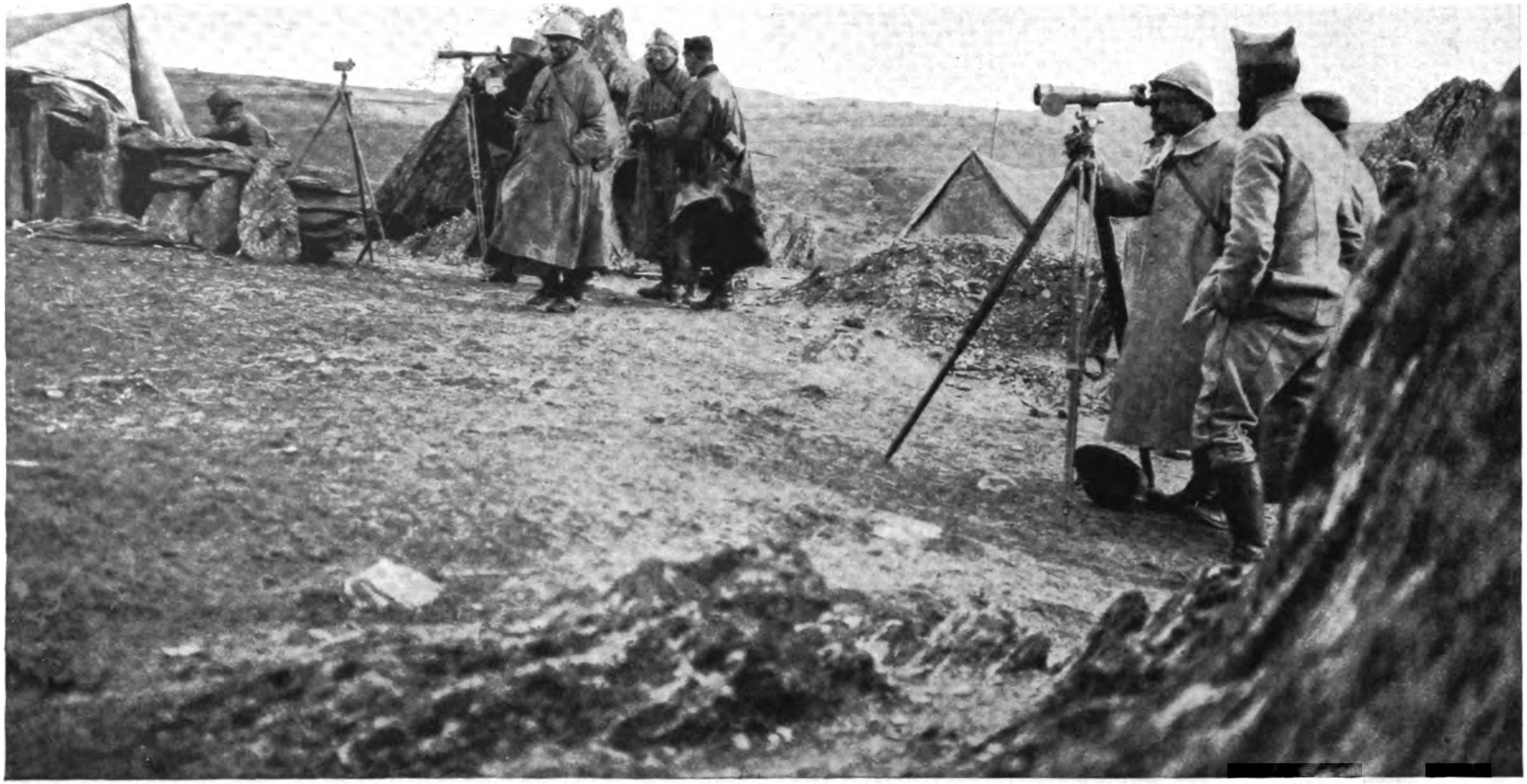
Photograph by Herbert Corey

THE FIRST PULL AT THE GUN WHEN ORDERS WERE GIVEN TO MOVE ON: IN FIVE MINUTES FROM THE TIME THE ORDER WAS RECEIVED THE GUN TEAM HAD BEEN HARNESSED AND THE BATTERY HAD STARTED



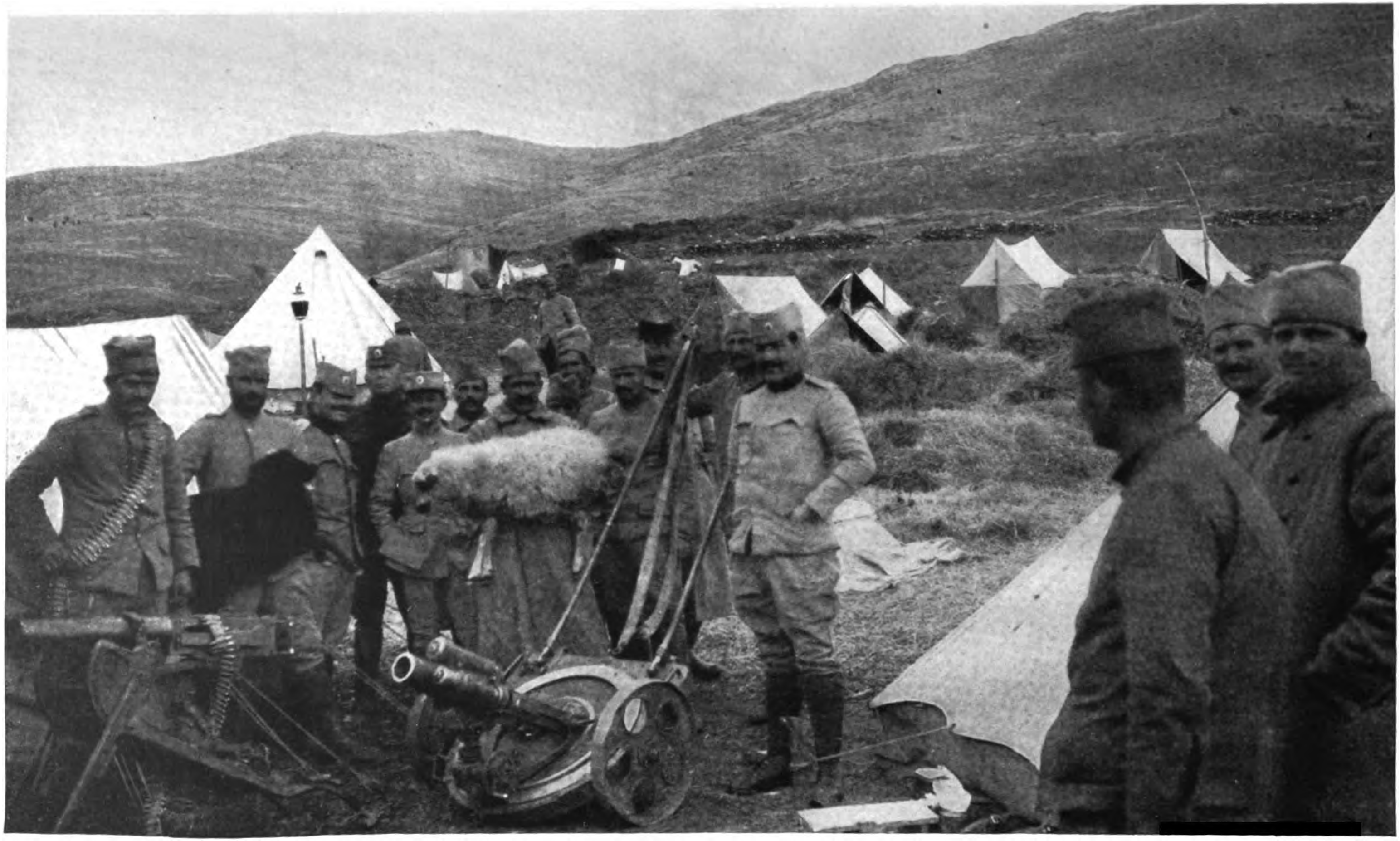
Photograph by Herbert Corey

A FOOD "DUMP" ALONGSIDE THE MONASTIR ROAD, BUT AT A SUFFICIENT DISTANCE FROM MONASTIR TO PRESERVE THE EATABLES FROM THE CONTINUALLY DROPPING SHELLS



Photograph by Herbert Corey

WATCHING THE DISTANT FIGHTING THROUGH THE BINOCULARS ON AN ARTILLERY OBSERVATION POST ON CHUKE MOUNTAIN WHILE THE SERBS WERE TAKING HILL 1212



Photograph by Herbert Corey

A LIGHT MOMENT IN THE CAMP OF THE MORAVA DIVISION OF THE SERBIAN ARMY

The day before a minenwerfer of a pattern new to the Serbs had been taken, and it, with a captured machine-gun, occupies the place of honor. To the left soldiers hold the black and white sheep which are the division's mascots.

Photograph by Herbert Corey

ORDERS HAD JUST BEEN RECEIVED TO MOVE THE BATTERY ON, AS THE BULGARIANS WERE RETREATING

Twelve horses were needed to tear the gun out of the reluctant mud

away. At night the tapping of the mitrailleuse seemed in the very edge of town.

It was too large a town to be hurriedly evacuated. There are few asylums for refugees in this land of ruined villages and minute farms. So that only the very poor—perhaps ten thousand in all—who had no food and no money and no hope, were sent away to Saloniki and elsewhere at the start. The richer ones trembled at home.

One by one they were permitted to leave; but when I saw Monastir for the last time, in January, fully one-half of its population were still hiding in the cellars and hoping that the Bulgarians might be driven on. The streets were empty. The one café that remained open was tenanted only by French soldiers, singing a rousing Gallic chorus; and in the single restaurant the only guests beside myself were the Italian officers. At night there is never a light in the city.

I have never felt so absolutely alone as in wandering through these broad, white, moonlighted streets. When a regiment of tired men shuffled by, their hobnails scraping on the cobbles, I sat down on the curb to watch them. They took the curse of emptiness off the town.

Then an English officer came up and asked the sort of a question one learns to expect from an Englishman and from no other man on earth.

"Where," said he, "can I find a piano? We want to have a sort of a sing-song tonight."

* * *

NIAGARA AT THE BATTLE FRONT

BY WILLIAM JOSEPH SHOWALTER

NIAGARA FALLS, held in reverence for its beauty by generations of nature-loving Americans, has enlisted for the war and is doing its bit in the cause for which the people of the United States have pledged anew their lives, their fortunes, and their sacred honor.

Aided by science, it has transformed the silvery sheen of its whitened waters into the fateful furies of the artillery duel and the infantry charge. The placid flood of the upper river has become hardness in steel, speed in manufacture, healing in antiseptics, whiteness in linen, cheapness in automobiles, durability in machinery.

It has lengthened the lives of big guns; it has multiplied the power and the number of shells; it is standing guard over every mile of war-carrying railroad track, and is protecting every engine axle and car wheel from failure in the rush of material to the front. Aye, who knows but that the very scales of victory will be turned by the weight it throws into the balance?

The story of Niagara's rôle in the battle of the nations is an epic in the history of war.

Twenty-seven years ago certain manufacturers, seeing the tremendous amount of power running to waste where the waters of Superior, Michigan, Huron, and Erie leap from lake level toward sea-level, undertook the installation of a great hydro-electric plant at Niagara. Later other power-developing interests entered the field, and then began a legislative and diplomatic war between those who would utilize some of the power of Niagara and those who would keep it untouched by the unsentimental hand of commercialism.

Finally the governments of the United States and Canada made a treaty regulating the amount of water that could be diverted for power purposes. Canada has used her share to the last second-foot, but the United States has never permitted the utilization of a considerable share of her allowance.

A VAST ELECTRICAL LABORATORY

But for the part used there has been rendered by the users one of the most remarkable accounts of stewardship in the history of commercial progress. The cheap power obtained made Niagara a laboratory where great ideas could be transformed into nation-benefiting enterprises.

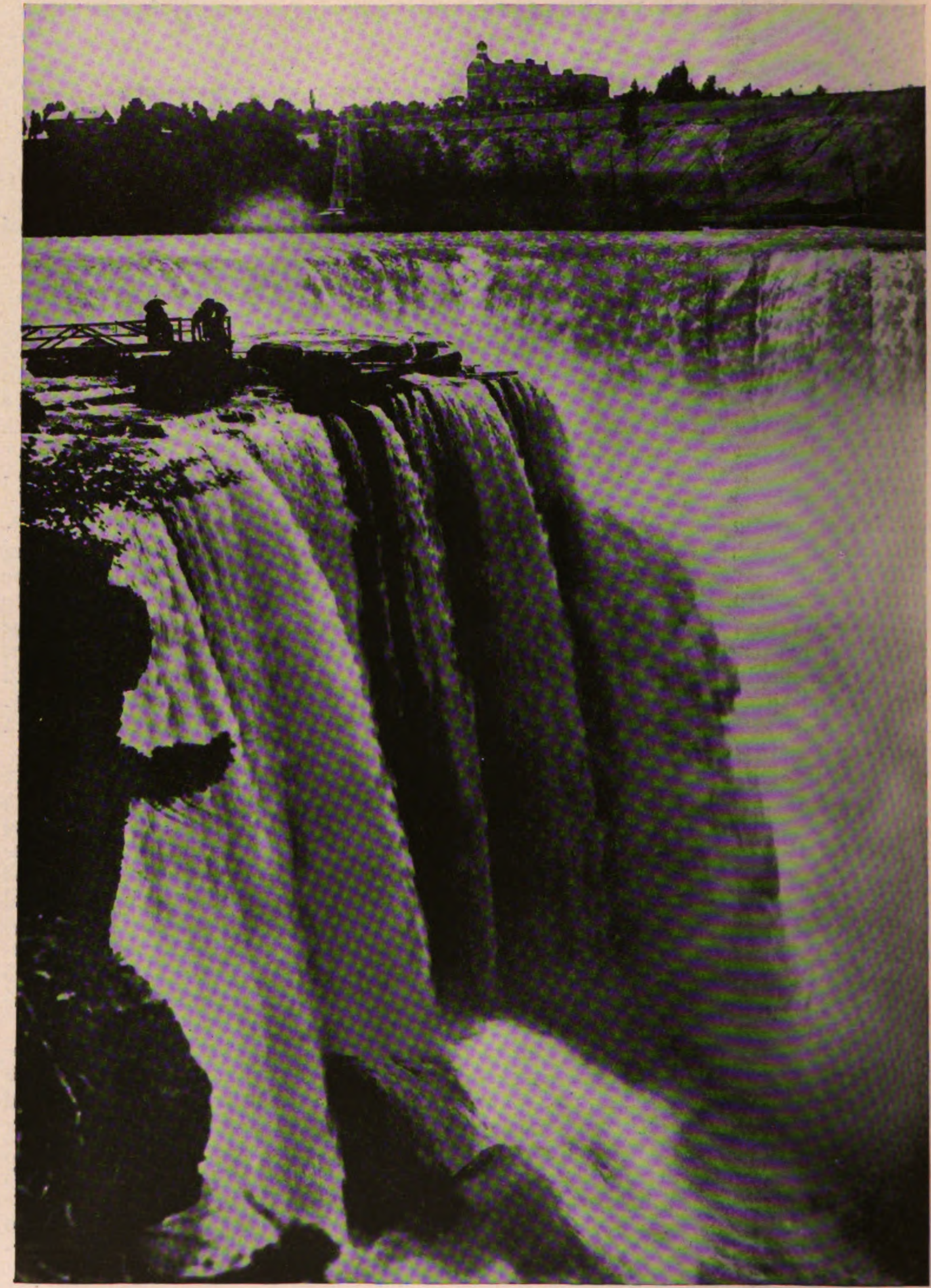
When Niagara power was first developed, efforts to make artificial grinding materials were proving a failure because of a lack of electric current at a price the new venture could afford to pay. Those who backed the process thereupon went to Niagara Falls, set up a plant, and founded the artificial abrasive industry. How much its success means to America cannot be overestimated.

Take the grinding machinery out of the automobile factories, remove it from the munition plants, eliminate it from the locomotive works, car foundries, and machine shops of the country and you would paralyze the nation's whole industrial system. And that would have happened ere now had not Niagara's artificial abrasives stepped in to save the day when the war shut out our natural supply of emery and corundum from Asia Minor.

There is not a bearing in your automobile but is ground on Niagara-made grindstones; crankshafts are roughened and finished with them, pistons and cylinders are made true, camshafts likewise, and a hundred critical parts of every car, whether of the cheapest or the most expensive make. It would be impossible to build anything of tool steel on a commercial basis without Niagara's abrasives.

NIAGARA SHAPES AND HARDENS OUR SHELLS

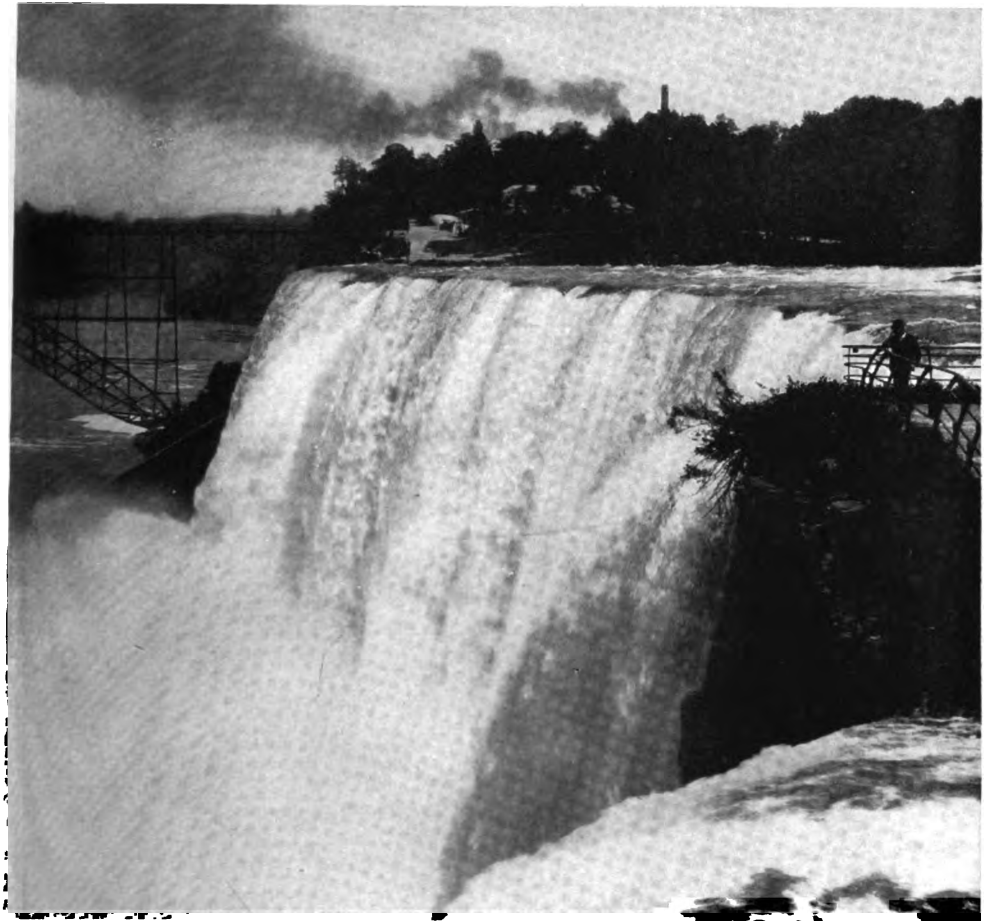
No shell goes to Europe whose nose has not been ground into shape on Niagara-made grindstones. Likewise it is



Photograph by Ernest Fox

HORSESHOE FALLS FROM GOAT ISLAND

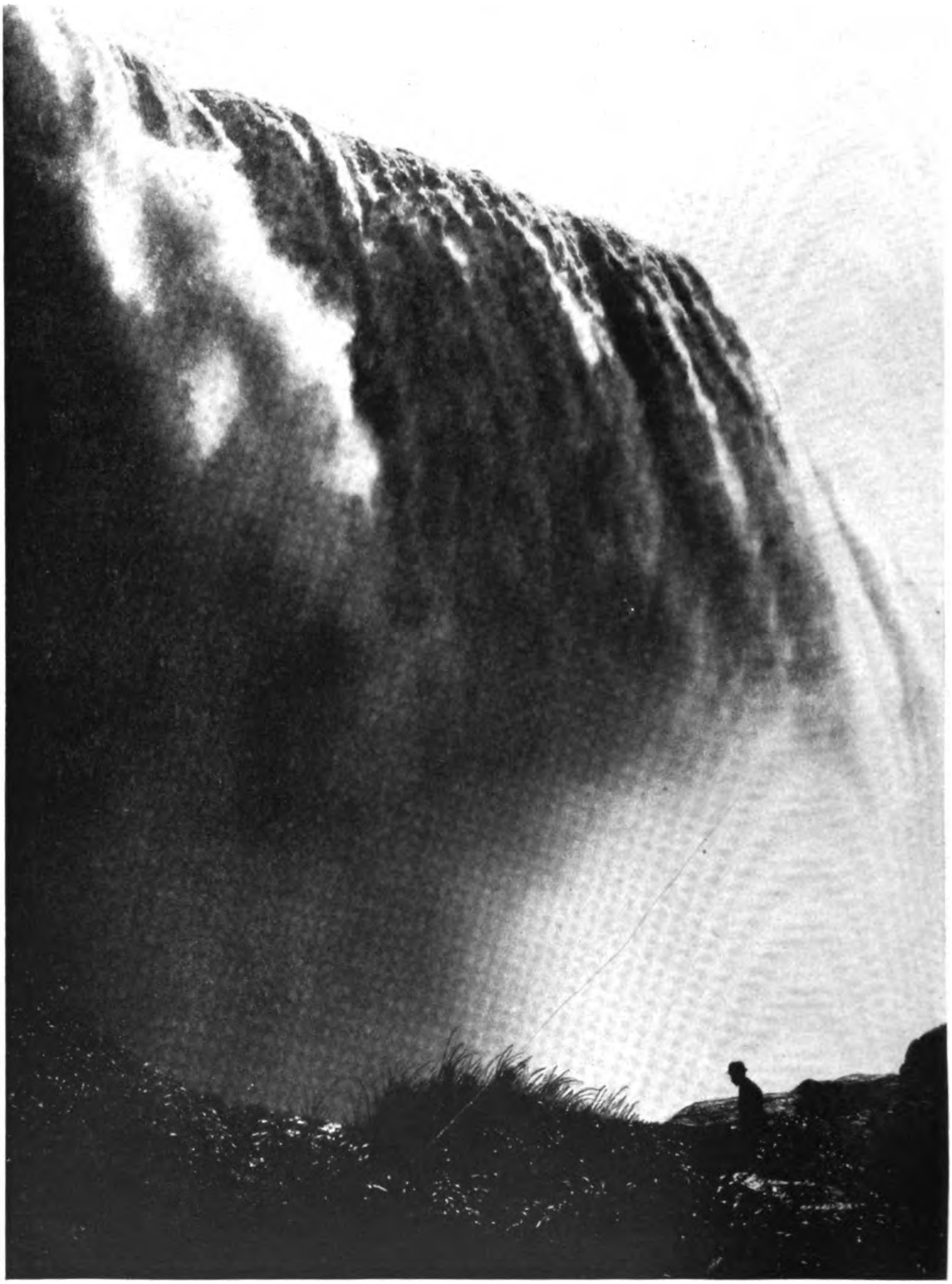
The shimmering softness of the cataract has been transformed by a miracle of industry into a sure rock of defense. From the seemingly insecure wooden causeway shown to the left the spectator commands a wonderful panoramic view of the very heart of Niagara.



Photograph by Ernest Fox

AMERICAN FALLS FROM GOAT ISLAND

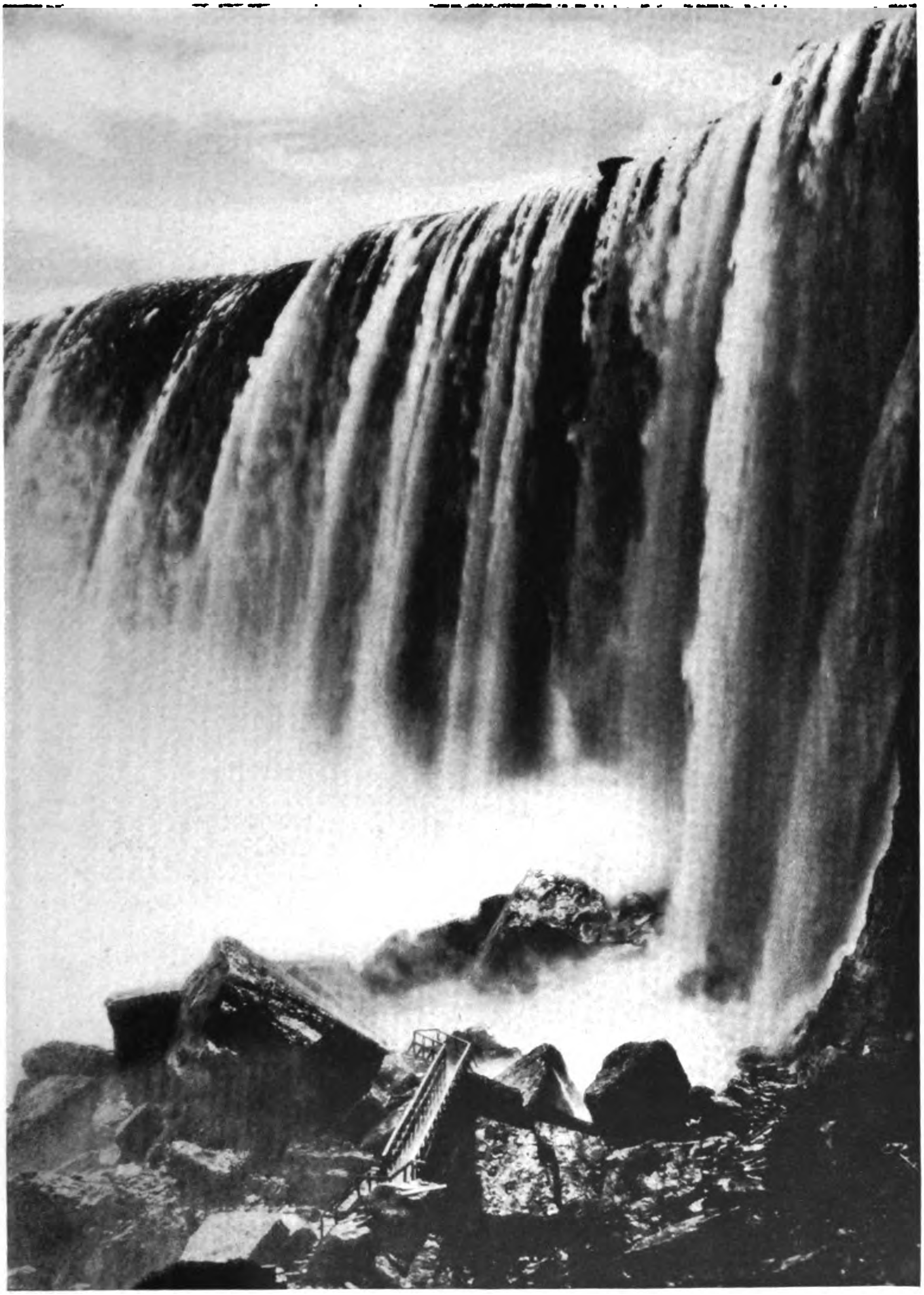
Directed by the magic of man's ingenuity, the resistless energy of these raging waters is transmuted into hardness in steel, speed in manufacture, healing in antiseptics, whiteness in linen, cheapness in automobiles, durability in machinery.



Photograph by Ernest Fox

THE AMERICAN FALLS IN THEIR PLUNGE OF 167 FEET

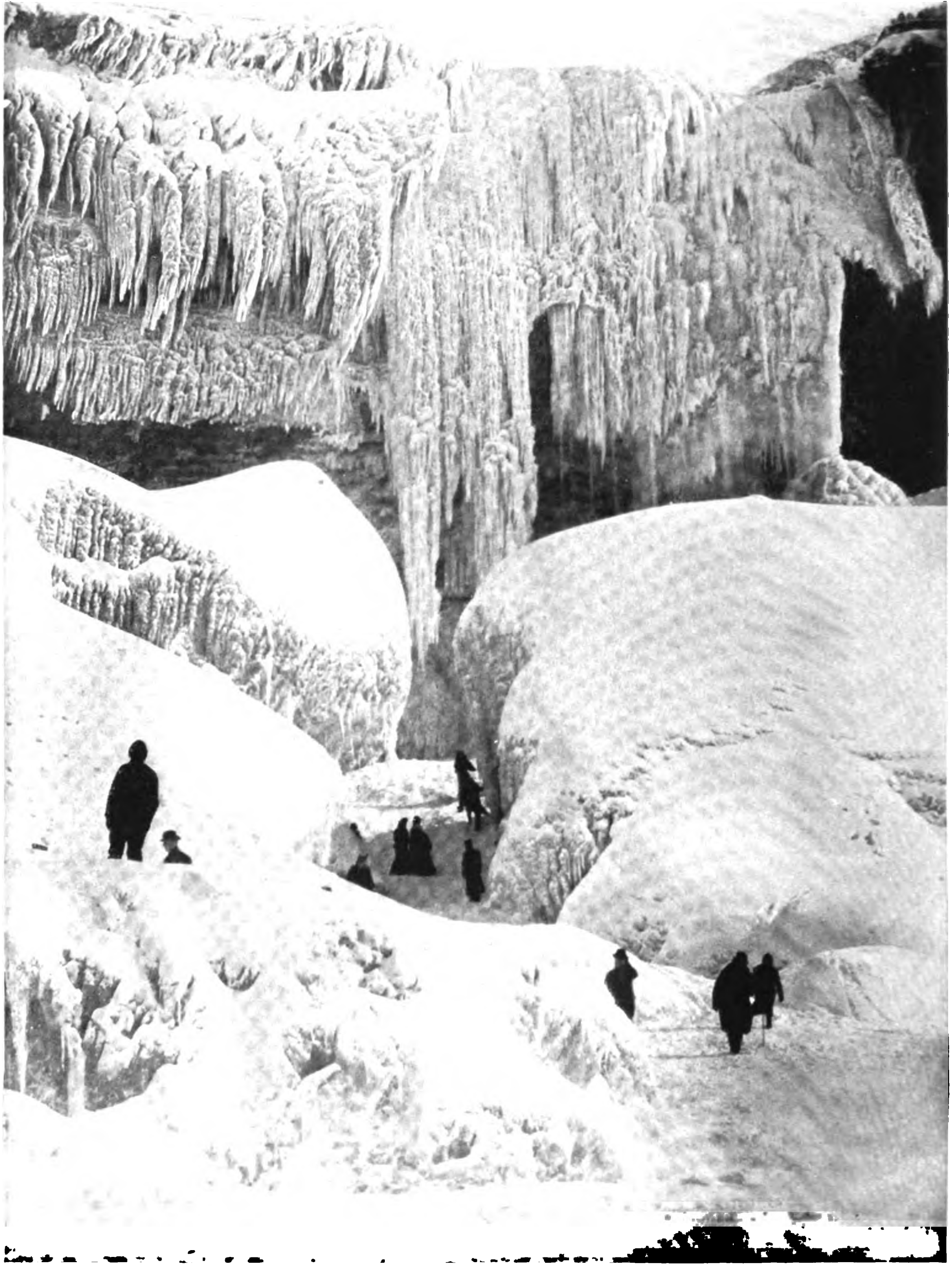
A modern Orpheus, science has lured the mighty waters of Niagara to follow it into the channels of utility, yet without sacrificing the beauty and grandeur of the world's noblest cataract.



Photograph by Ernest Fox

HORSESHOE FALLS FROM THE CANADIAN SIDE

The ceaseless flow and measureless power of Niagara are symbolic of America's purpose and resources, which will be mobilized for service in the cause of humanity on the battlefields of Europe. No hand can stay the nation, no fleets or armies turn it from its goal—the emancipation of mankind from the tyranny of despots.



Photograph by Ernest Fox

NIAGARA'S CAVE OF THE WINDS

The Niagara that mantles itself in ice at the silent touch of the Frost King, in its turn touches sand and coke, and they become near-diamonds; water and salt, and they become purity in drinking water; clay, and it gives forth a marvelous metal; a dead wire, and it lights a city or drives a car; carbon and silica, and they are transformed into lubricants or inks.

Niagara's abrasives that have done more than any one other thing to master the "hot box," that *bête noire* of the American railroad man and the worst enemy of schedule-time train transportation the world around.

While the processes of carborundum manufacture were being perfected another lesson was learned. Quartz, you remember, is the geologist's thermometer, for it is formed between narrow ranges of temperature. If the materials from which Nature makes it are subjected to more than so much heat, they take on an entirely different character from quartz. The same is true if they are subjected to less than a certain amount of heat.

So, also, it is with carborundum. In its manufacture a large quantity of a mixture of coke and sand, with a touch of sawdust and a dash of salt, is put into an electric furnace. A heavy current of electricity is passed through this for 48 hours, heating it to 1,350 degrees centigrade.

If it is properly heated, there forms around the central core of coke a great array of crystals, large and small, almost as hard as diamonds. If too much heat is applied, instead of forming into crystals, the material breaks up into fine particles of black dust and you have graphite.

LEADS FOR PENCILS; ELECTRODES FOR FURNACES

Therefore, largely by the same process, the electric furnace produces from the same materials the near-diamond of the artificial grindstone and the microscopic dust that becomes lead for a pencil, color for ink, base for lubricants, electrodes for furnaces and death chairs, or a thousand other things, under the manipulations of industrial science.

In making carborundum wheels, whetstones, and other grinding implements, the crystals are separated, graded, mixed with various binders, pressed into the shapes desired, dried, and then baked in kilns, like porcelain or other ceramic products. In some cases binders are used which do not permit exposure to heat, as in the case of emery cloth.

Carborundum has a companion, alundum, as an abrasive, each having its more advantageous uses. In the manufacture of the latter certain clays are used. One of these is bauxite. This is first purified and then put into a water-jacketed electric furnace, which fuses the aluminum oxide. The fused material is taken out, crushed, and prepared for use much after the manner of carborundum.

Between the two, Niagara has succeeded in saving American industry from the calamity that would otherwise have ensued as a result of the cutting off of our supply of natural abrasives. For more than two years Niagara's abrasive industry has been mobilized against the Central Powers with an effect that cannot be measured.

GIVING STEEL A GREATER HARDNESS

But Niagara's bit in behalf of American arms does not end with the story of abrasives; indeed, it only well begins. The story of ferro-silicon is another illustration of how beauty under the alchemy of science is transmuted into grim-visaged war.

Last year this country made more steel than the whole world produced when William McKinley became President of the United States. Nearly three-fourths of that steel was made by the open-hearth process, and ferro-silicon was used as a deoxidizer, to purify it by driving out the oxygen. Furthermore, in the making of big steel castings that alloy is practically indispensable in the elimination of blow-holes.

The entire ferro-silicon industry, practically, is centered at Niagara, which thus gives pure steel and sound castings as another part of America's contribution to the cause of Allied victory. Every contract for shell steel that has been made in two years calls for a content of ferro-silicon.

There is another alloy of iron indispensable in war, and well-nigh so in twentieth century peace — ferro-chromium. This is the alloy which gives that peculiar hardness to steel which makes it resistant almost beyond human conception. It has been estimated that a modern 14-inch shell, such as our Navy is ever holding in readiness for the possible dash of a German fleet, has a striking momentum at a distance of eight miles equal to the colliding force of a modern express train running at top speed.

Yet this shell must have a nose so hard and so perfect that, although the entire force of the impact is upon its narrow point when it strikes the armor plate, it will pierce the plate without being deformed itself.

NIAGARA PROTECTS YOUR AUTOMOBILE AXLE

Not only does ferro-chromium go into the shells of American manufacture, giving them hardness and death-dealing qualities which must make the stoutest enemy heart quail, but it gives strength to the tool steel shaft, life to the automobile axle and gear, and serves peace and war alike with equal fidelity. And Niagara produces half of America's supply of ferro-chromium today.

Other alloys indispensable to our success in the great war, in the production of which Niagara is a contributing factor, are tungsten, vanadium, and molybdenum. Some of these alloys are made there, but in the production of the part that is not Niagara contributes the aluminum which makes their preparation possible. Together with chromium, they give us our high-speed steels, gun steels, etc.

America has been able to turn out munitions with a rapidity that has astonished the world and even ourselves, because through Niagara's influence the high-speed tool reached an unprecedented development in days of peace.

In the old days of carbon steel the machine that would cut rapidly would heat the steel so hot as to ruin its temper. Today alloy steel is not even fretted, much less put out of temper, by cutting speeds that would have been fatal to any carbon steel ever produced.

NIAGARA'S GIFT OF ALUMINUM

Where once a cool cutting edge was absolutely indispensable, now even a huge battleship shaft can be turned down, revolving at a speed of 30 feet a minute and giving off shavings more than half an inch thick.

It was the touch of Niagara that transformed aluminum from a laboratory curiosity into one of the most essential of all the minor metals, one with which it would now be difficult to dispense and which has been power to the Allied arm in the European war. Take it out of the automobile industry, and the stream of cars America is sending to the battle front would fall to low-water mark, instead of rising above it.

Then there is silicon metal which keeps transformer steel in electric transmission from ageing, and which, in conjunction with caustic soda, will produce the gas for the army's hydrogen balloons, and titanium—both Niagara products which cannot be overlooked in any summary of Niagara's part in America's war.

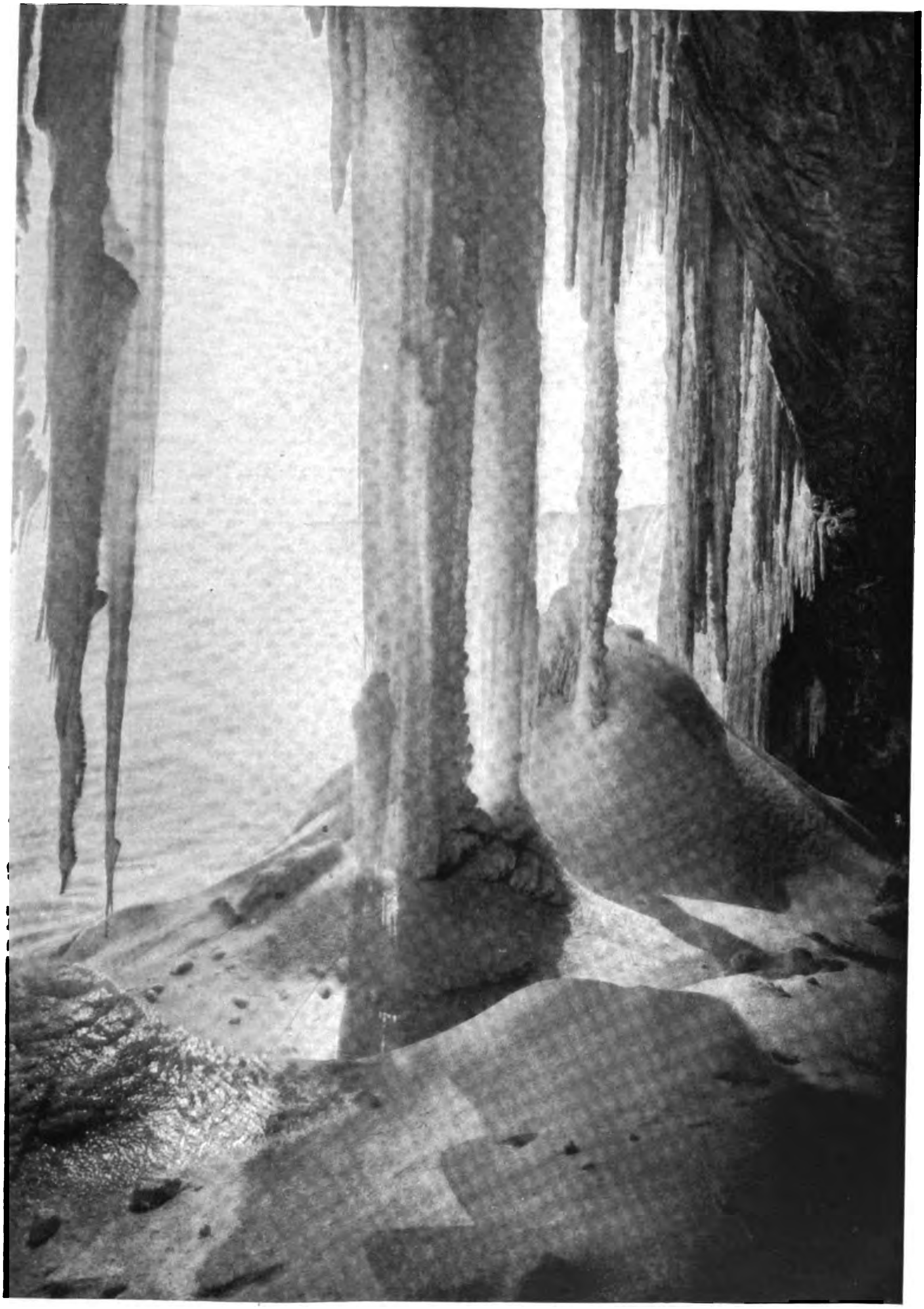
Between Niagara's alloys and her abrasives, it is estimated that every industry utilizing steel has multiplied its productive powers by three. Engineers who know every phase of the processes of automobile manufacture declare that if it had not been for these abrasives and alloys, every motor-car factory in America would have had to slow down to one-fifth of its normal production when the war broke out.

PREPAREDNESS AGAINST THE DYNAMITE PLOTTER

Calcium carbide is another product of the electric furnace which Niagara is giving to the nation in vast quantities. One furnace uses egg-size lime and chestnut coke in the proportions of 3 parts lime and 2 parts coke and is able to produce as much calcium carbide in a day as the original furnace could produce in a year. This compound is the only commercial source of acetylene, whose many uses are well known.

In every big industrial plant in the country there is fear of the spy, and every oxy-acetylene blow-pipe in the neighborhood is registered, so that in the event of a wrecked plant the work of rescue and restoration can begin at once.

When the *Eastland* went down in Chicago harbor it was the cutting power of the oxy-acetylene flame that liberated the imprisoned people. Calcium carbide is also the material from which calcium



Photograph by Ernest Fox

ICICLES UNDER THE HORSESHOE FALLS: NIAGARA

When Nature desires an altar dedicated to her own glory she seeks Niagara in winter and there creates gigantic monoliths of ice and snow, carves them with her chisels of wind and water, quickens them with color snatched from a sunbeam, and lo! her worshipers come to gaze in silent adoration in the aisled and vaulted temple of her matchless handiwork.

cynamid, essential in the fixation of nitrogen, is obtained.

But Niagara does not stop with these things. In the trenches of Europe there must be pure water lest epidemic disease sweep over them, destroying more than the shells, shrapnel, and machine-guns of the enemy; and Niagara comes forward with chlorine, or an allied product, which kills the germs of disease, yet leaves the drinker untouched.

In the simplest form, the process of breaking up salt and getting command of the qualities of the two elements in it consists of dissolving about one part of common salt in eight parts of water and passing a given current of electricity through it. The resultant fluid is a great bleacher and disinfectant. A gallon of it will kill all the germs in a day's drinking water of a city like Washington. Of course, the processes of manufacturing chlorine, bleaching powder, and other compounds is more complex.

A thousand American cities sterilize their water with these products, which have done more than any other agency in the hands of the sanitariums to wipe out water-borne epidemics. In the hospitals of France and England they form the active part of mixtures used to sterilize the wounds of the soldiers. Without them there would be no book or letter paper; cotton dresses and sheets would be no longer white; our every-day chemical fire extinguisher would disappear.

One might go on showing how Niagara aids America in her preparedness campaign. Its laboratories are producing the materials from which picric acid and other powerful explosives are made. They also are producing metallic soda from which is manufactured sodium cyanide, used alike in extracting gold and silver and in electro-plating.

All these things Niagara has been able to do without detracting at all from its beauty — even without exhausting the amount of water authorized by the Canadian-American treaty.

HELP OUR RED CROSS

✠

THE RED CROSS needs at this time more than it ever needed before the comprehending support of the American people and all the facilities which could be placed at its disposal to perform its duties adequately and efficiently.

I believe that the American people perhaps hardly yet realize the sacrifices and sufferings that are before them.

We thought the scale of our Civil War was unprecedented, but in comparison with the struggle into which we have now entered the Civil War seems almost insignificant in its proportions, and in its expenditure of treasure and of blood. And, therefore, it is a matter of the greatest importance that we should at the outset see to it that the American Red Cross is equipped and prepared for the things that lie before it.

It will be our instrument to do the work of alleviation and of mercy which will attend this struggle.

WOODROW WILSON.

OUR ARMIES OF MERCY

BY HENRY P. DAVISON

CHAIRMAN OF THE WAR COUNCIL OF THE AMERICAN RED CROSS

Probably every member of the National Geographic Society, if not already in service, has at least one near relative or dear friend preparing cheerfully and unselfishly for the battle lines on sea and land. Those who cannot go are searching for means to help their loved ones and our beloved country. In order to assist, in their patriotic ambition to be of service, those who must stay at home, the NATIONAL GEOGRAPHIC MAGAZINE, *by courtesy of the American Red Cross, publishes herewith the principal addresses at one of the most awakening meetings that has ever assembled in America—that of the American Red Cross War Council, held in Washington on May 24 and 25.*

The meeting had been called by the President of the United States to plan means for raising immediately an immense Red Cross war fund. Every one who reads the addresses by General Pershing, Henry P. Davison, Ian Malcolm, John H. Gade, Herbert C. Hoover, Frederick Walcott, Secretary Baker, Eliot Wadsworth, and ex-President Taft will appreciate the imperative necessities of our Department of Mercy.

The members of the National Geographic Society are urged to coöperate with the Red Cross through their local Red Cross chapters, but, for the convenience of the many thousands of members living in remote places, where there is no Red Cross chapter, remittances may be made to the Red Cross fund through the National Geographic Society, using the blank form printed on another page.

GILBERT H. GROSVENOR, *Director and Editor.*

THE most stupendous and appealing call in the history of the world to aid suffering humanity confronts our Red Cross. Millions of men who have been fighting for liberty lie dead or wounded; millions of women and children are homeless and helpless; hundreds of towns and villages have been destroyed; disease and distress are rampant.

Up to now our own people have not suffered. While Europe has been pouring out her life-blood, America has experienced a prosperity she had never known before.

But now we ourselves are in this gigantic war. We now see that the struggle against autocracy and tyranny which our Allies have been making is and from the first has been in reality no less our struggle than theirs. We ourselves must now share the suffering which they have endured; we, too, must bear the burdens and we must do our part in a very real way.

NEEDS BEYOND COMPUTATION

Our Red Cross is a vital factor in the struggle. To promote efficiency in administering its great responsibilities, the President of the United States has created a Red Cross War Council. We of the Council know now only what the minimum requirements are; but we know already that the needs which our Red Cross alone can supply are at present beyond computation.

Something of what we must expect to do and something of the sacrifices which we must expect to make will be indicated by the following summary of the very present situation:

Hundreds of American doctors and nurses are already at the front. A force of 12,000 American engineers will soon be rebuilding the railroads of France. Upwards of 25,000 American men are now on the battlefields of Europe, fighting as volunteers in the Allied armies; soon 25,000 American regulars will be added to their number.

All our National Guard is to be mobilized, our regular army is to be recruited to full strength, and 500,000 other men are shortly to be called to the colors. Within a few months we should and will have in service an army of 1,000,000 and a navy of 150,000 men.

ECOLES
Les ORPHELINS de la GUERRE

Photograph from Harriet Chalmers Adams

PUPILS AT A FRENCH SCHOOL FOR WAR ORPHANS

In the midst of her battle for national existence, France is doing her utmost to provide an education for the children of her dead patriots. It is a difficult task, however, to feed and clothe as well as give instruction to the fatherless thousands.

These men must have our best. To prepare against their needs in advance will be a stupendous task which the Red Cross must undertake.

Doctors, nurses, ambulances, must be made ready. Vast quantities of hospital stores—linen, bandages, and supplies of every kind—must be prepared and at once. If we wait, it may be too late.

OUR DUTY TO OUR FLAG'S DEFENDERS

When we ask our own sons and brothers to fight for our liberty 3,000 miles from home, in a country already sore and afflicted, surely we cannot do less than prepare to take care of them in their day of suffering.

Gallant Canada from 8,000,000 population raised an army of 450,000 men. Eighty thousand are dead or injured, and Canada has raised in value $16,000,000 for the Red Cross to relieve her sick and wounded. Her Red Cross, thus vitalized by the sacrifice of those at home, has been able to save thousands from death and misery.

Immediately our soldiers go into camp their dependent families will become a problem. Obviously, in a country the size of our own, the proper and practical way to distribute both the burdens and the benefits fairly and uniformly will be through the government itself. This is especially fitting when voluntary contributions must meet such enormous requirements in other fields.

There will undoubtedly arise a large number of special cases requiring additional or unusual assistance. Such assistance should be made systematic largely through local chapters of the Red Cross.

When our men go to France we must not only prepare to take care of them when sick and wounded; another very serious problem will confront them and will confront us in our care and forethought on their behalf.

Englishmen and Frenchmen, when from time to time they are relieved from their grim duties in the trenches, go home. The soldiers from other countries on the firing line cannot go home; there is no home to go to! They go to Paris. Many of them do not return from Paris as efficient soldiers as they were when they went there.

THE HOSPITAL FOR CONSUMPTIVE SOLDIERS: BLIGNY, FRANCE

Not all the casualties sustained in the trenches are inflicted by the bullets of the enemy; tuberculosis finds many victims among those not inured to the hardships of trench life. France has been quick to recognize the necessity for giving instruction to her invalid soldiers, in order that they may, by practicing the lessons of hygiene, be restored to health and to their homes.

Our American soldiers must have a home in France—somewhere to rest, somewhere to find a friendly atmosphere, somewhere to go for recreation and wholesome amusement.

These men will be returning to this country some day. We want to make it certain that as many as possible return in health and strength, and not afflicted with disease from which our forethought might have protected them.

The Red Cross must—and it alone can—become a real foster parent of our soldiers while they are in Europe. To perform that function well will require a large sum of money.

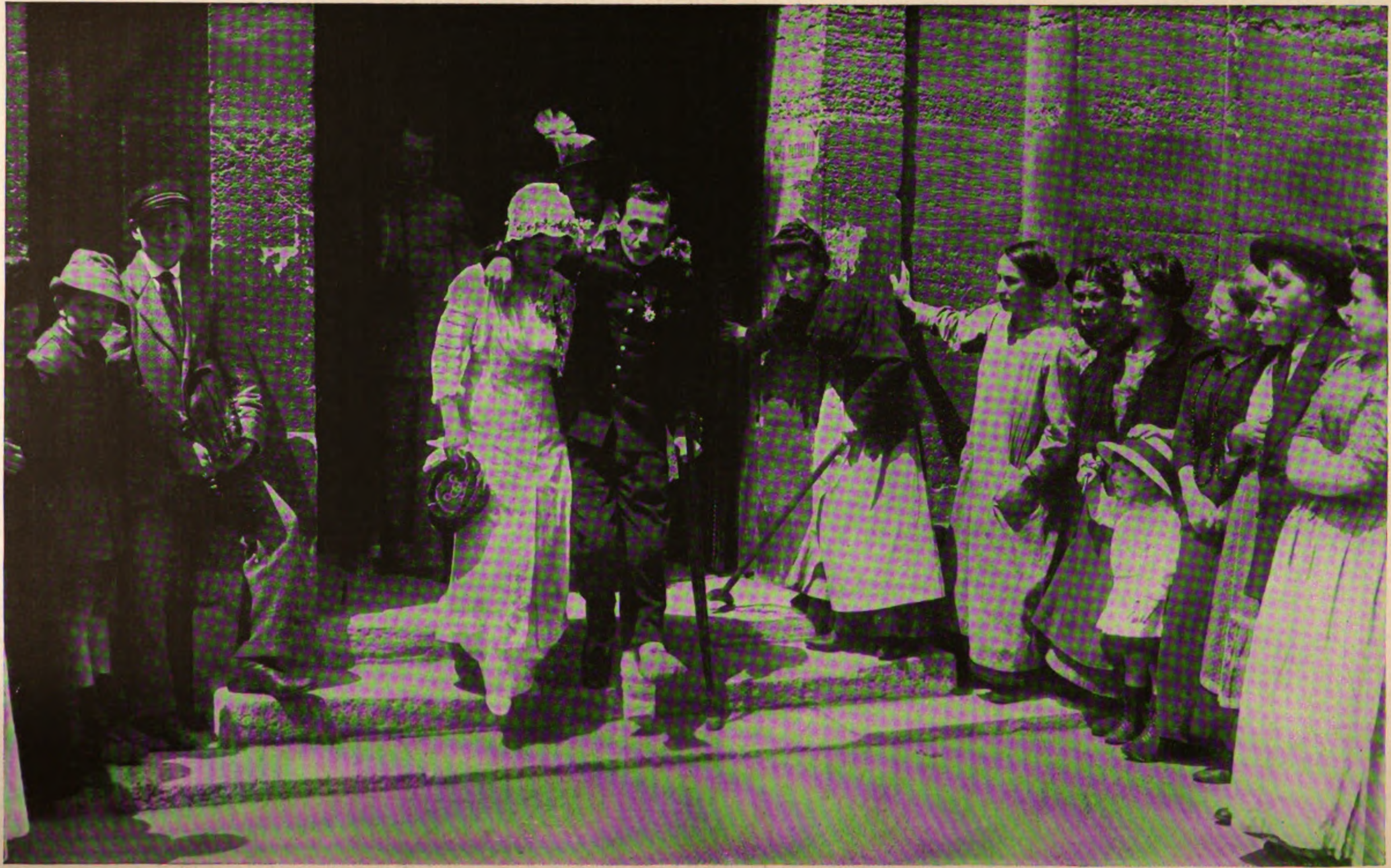
The needs of France cannot but stir the heart of every American. Tuberculosis has become prevalent as a result of this trench war. And the disease is spreading. Here is a call not only to aid the brave and liberty-loving French people, but also to help make this afflicted country healthy for our own sons and brothers who are soon to be there in such great numbers.

Hundreds of towns and villages have been destroyed in France. In her devastated regions men, women, and children are homeless and suffering for the barest necessities of life. We ought at the earliest moment to provide these peoples with the simplest essentials to begin life anew.

THE CRYING NEEDS OF WAR-WASTED COMMUNITIES

They need clothing, agricultural implements, domestic animals, especially horses and cows, seeds, fertilizers, tools, bedding, stoves, and the elementary materials with which to cover themselves by day and by night. Some idea can be formed of the amount involved in such an undertaking, with the knowledge that Mr. Hoover, through his magnificent organization, has advanced for governments and from private subscriptions $350,000,000 for relief in Belgium.

If there were no thought of protection and provision for our own people in France, can we hesitate generously to provide from our plenty that we may show some appreciation of our everlast-



Photograph from Harriet Chalmers Adams

MARRIAGE AT THE CHURCH OF ST. JACQUES DU HAUT PAS: PARIS

Having been decorated with the Cross of the Legion of Honor for an act of signal bravery, in the performance of which he was severely wounded, Lieutenant Pepetin returned to Paris and found a staunch and loyal helpmate to guide his literally faltering footsteps in the path of life.

ing debt to the people of our sister republic.

THE VITAL IMPORTANCE OF RED CROSS AID TO RUSSIA

We should do something and do it immediately to hearten afflicted Russia. On the Russian line of 1,000 miles there are only 6,000 ambulances, while on the French front of 400 miles there are 64.000 ambulances fully equipped.

Behind the lines in Russia are millions of refugees from Poland, Lithuania, and western Russia—driven from their homes by the German and Austrian armies—wandering from city to city, crowded into unfit habitations, huddled in stables, cellars, outhouses, and dying from disease due to exposure and insufficient food.

Russia needs our trained women to instruct hers in the art of nursing; she needs enormous quantities of the elementary articles necessary to relieve the very worst cases of pain and suffering.

Probably nothing that can be done immediately will do more to win this war than to strengthen Russia. The opportunity and the duty here alone are almost without limit in extent. Our Red Cross is the one agency which can exert itself effectively in this terrible emergency.

The foregoing are but the greater and more urgent needs of the moment. Other work of great magnitude must be done. Our Red Cross must maintain a supply service, whereby all the contributions in kind which our people make can be efficiently distributed. We must organize comprehensive plans to keep the families and friends of our soldiers and sailors informed as to the wounded and missing.

Indeed, the duties and the opportunities which confront our Red Cross have no precedent in history and are not within human estimate today. The War Council, however, can make definite plan and budgets only to the extent to which it is supported by the generosity of the American people.

EVEN THE CHILD CAN HELP

If each individual American now contributes his "bit" there can be no failure. America will, we feel sure in this, again demonstrate her ability to handle a big task in a big way.

If, in making a survey of the obligations and opportunities of our Red Cross a gloomy picture is drawn, we must not be discouraged, but rather rejoice in this undertaking and in the confidence that we can by our voluntary action render a service to our afflicted allies which will for all time be a source of pride and satisfaction in a good deed well done.

As President Wilson has said: "But a small proportion of our people can have the opportunity to serve upon the actual field of battle, but all men, women and children alike, may serve, and serve effectively."

We must and will all immediately concentrate our energies and efforts, and by contributing freely to this supreme cause help win the war.

THE NEEDS ABROAD

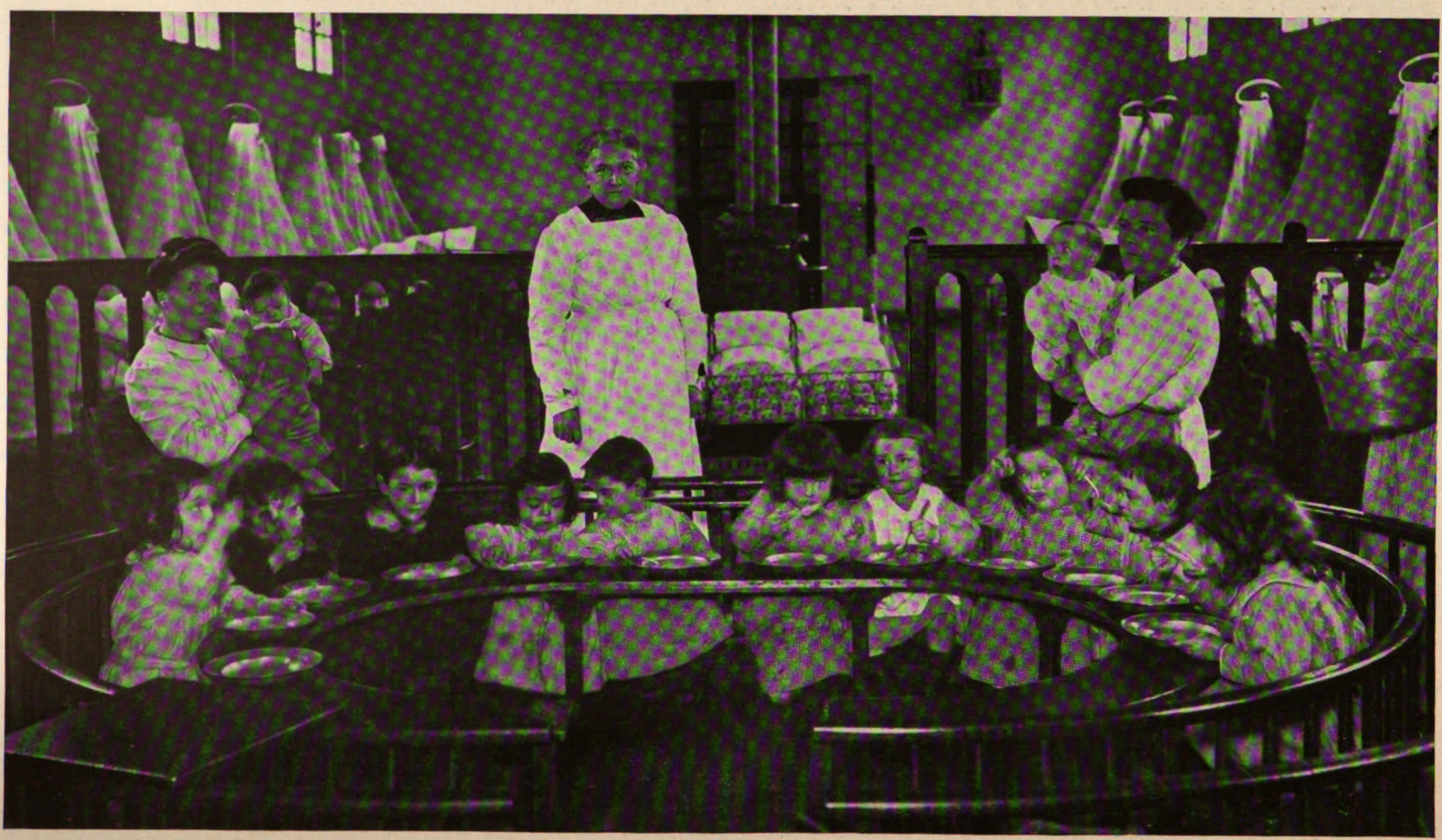
BY IAN MALCOLM

MEMBER OF THE BRITISH RED CROSS AND OF THE HOUSE OF COMMONS

IT IS difficult, nay, almost impossible, to imagine or to describe the damnable devastation of modern war.

It is one thing to glance at long lists of casualties in the morning papers, to read the descriptions of villages and townships ruined by artillery fire. It is quite another thing to sense, as I have had to do, the true inwardness of the vast human tragedy that is being enacted across the sea.

The silence of London and Paris, and of our great cities in France and England; the prevalence of black as the color in which most of our women are dressed, an eloquent testimony to the mourning that is in the hearts and homes of nearly every family in the land; the streets full



Photograph from Harriet Chalmers Adams

DINNER TIME IN THE INTERIOR OF THE CHILDREN'S HOME AT VILLE D'ARRAY

In the years to come these future citizens of a republic restored to peace and prosperity will hold as their dearest heritage the knowledge that their fathers died that their country might live of wounded in hospital uniforms, either walking or being driven out for an airing—these are some of the outward and visible signs of the ravages of war.

Ambulances driving gently down all the thoroughfares, the Red Cross flying over one or more large houses in every street of the residential quarter—these are tokens of the same tragic truth.

And abroad, in France and Flanders, you come nearer still to the true agony of the situation. How can I describe it? Think of the worst earthquake, of the worst floods, that have scourged and shocked you here at home; multiply the horror of your impression a hundredfold, and you will come near to the horrors of the Marne and the Aisne.

Multiply them a thousandfold, and you will realize the ferocity of carnage at the battles of the Ancre and the Somme.

Multiply them two thousandfold, and that is the picture of misery and pain and death after the great battles on the plains of Russia and in the mountains of Persia and the Caucasus.

Think of the ruin by floods in Flanders, with the stench of thousands of carcasses, human and animal, poisoning the atmosphere for miles around for those who must stay day and night in the trenches; think of the devastation by fire in France, where villages and woods and broad pasture lands are utterly wiped out of existence—not a house nor a church nor a tree left standing, where once there were thousands of families living in a condition as prosperous and happy as anywhere in the world.

A PURGATORY OF PAIN

Then turn your minds to the picture of some great engagement; try to conceive long trenches of men writhing in torture from poisonous gas or from liquid flame, soldiers smashed and disfigured by shell wounds, their lacerations indescribable as their heroism is undaunted.

Leave the trenches and retire behind the firing line with me. Here we are on roads lined with men on stretchers some dead, scores mortally wounded, hundreds upon hundreds of casualties in one or another degree of collapse. The middle of the roadway is filled by dozens of ambulances after every action; there is perhaps a mile length of hospital trains waiting in a siding to convey the wounded to base hospitals.

And all this purgatory of pain is dependent for relief upon the skill of our doctors, the tenderness of our nurses, the efficiency of our equipment—all of which means, and is dependent upon, the generosity of the public.

May I not take it for granted that just as the fighting manhood of the United States is soon to be with us in the trenches, so you of the Red Cross who have done so much for us in the past are now eager to be mobilized in the allied Army of Mercy, and of charity that is almost divine?

I assume that your organization is coming with us in increased numbers and with increased equipment, if necessary, to the mountains above and around Saloniki, to the plains of Egypt, to East Africa, to the waterless wastes of Mesopotamia—our tears and triumphs mingling beneath the shadow of the Red Cross flag.

WHERE UNASSUAGED WOUNDS CRY FOR AMERICA'S COMPASSION

Nay, further, I should like to assume that, with your resources inexhaustible as your hearts are warm, you will pour out of the fullness of your treasure into war zones where we have no men fighting, but where ambulance columns are desperately needed, such as Russia and Roumania.

You are wanted there, though the pride of Russia will prevent their even telling you so. I cannot think of a greater movement at this moment, in the interests of bleeding humanity or of Allied propaganda, than the offer of a fully equipped ambulance corps to work with the Russian army and for the Russian people.

Have I said enough to indicate to you the illimitable sphere of Christian influence that lies before you if you care to occupy it? Have I said enough to show you the dire needs of those who are fighting in the sacred cause that you have made your own?

Even so, I have left untouched all the work of caring for the homeless, starving populations, now being daily released

© E. W. Weigle.

PRIESTS AND NUNS WHO MINISTERED TO THE WOUNDED AT TERMONDE, BELGIUM

These shattered walls and piles of debris tell their own story of the terrific fighting which occurred in and around this little city in the early days of the war, when it was captured and recaptured many times. And ever in the thick of battle the "angels and ministers of grace" were at hand to succor the wounded and comfort the dying.

from the bondage of nearly three years' servitude, as slowly, but surely, we are driving back the Germans on the western front. It is, of course, for your great-hearted public to decide whether and when and how they can best intervene in this area of human desolation.

Unless I have totally misconceived your splendid ambition to rescue and to save in whatever part of the world war zone you are needed most, I have indicated to you by inference the tremendous part that money must play in the great drama of your intervention.

Am I to specify in detail a few of the objects upon which, it may be supposed, your money will be most usefully spent? I can only do so by reference to your own schedules of expenditures.

A THOUSAND NEEDS FOR DOLLARS

We have base hospitals, running into hundreds, I am sorry to say, in France and England; advanced base hospitals, and special hospitals for convalescents, for cripples, for the blind, for face cases, and homes for the permanently disabled.

We have hospital ships on the English Channel, in the Mediterranean, on the Adriatic, and on the Tigris.

We have hospital trains in England, France, and Egypt; hundreds of motor ambulances in all our theaters of war, with their repair cars and other necessary adjuncts.

There are thousands of doctors, nurses, orderlies, etc., to be clothed and fed; there are canteens for Red Cross men, rest homes for nurses worn out by assiduous work and ceaseless activity. We provide, of course, hospital clothing, drugs, dressings—all in enormous quantities for equipment and in reserve. These reserves are forever being replenished and forever rising in cost.

Then if you affiliate the Young Men's Christian Association to yourselves, there will be scores of canteens wanted—you can never have enough of them—for the soldiers sent to rest camps or to the base.

BACK ON CANADIAN SOIL

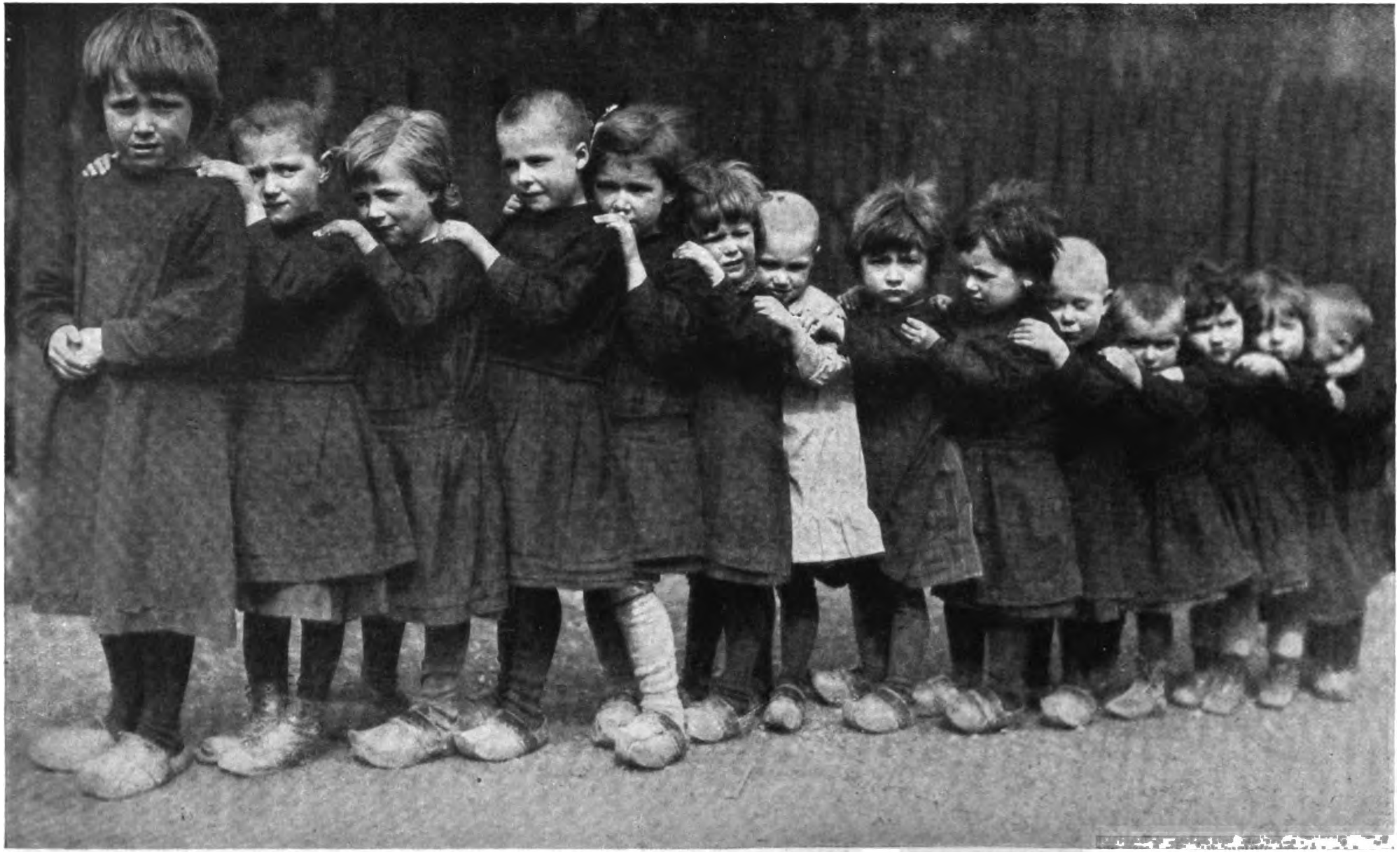
No fighting men of the world war have shown finer stamina than the boys of our neighbor nation, the Dominion. Their recent heroic offensive which wrested the supposedly impregnable Vimy Ridge from the Germans was only one of a long series of brilliant achievements. Whenever their condition permits, the wounded Canadians are brought home to recuperate, as in the case of this Dominion soldier, who is being tenderly nursed back to health at the Spadina Military Hospital, Toronto.

You will want accommodation for officers or men sent over to England from time to time for the regulation periods of leave.

I feel I could go on forever suggesting to you ways and means for the expenditure of all the money that you can collect in June and go on collecting afterward; but the time at my disposal, to say nothing of your patience, is exhausted, and I must close.

But I close with these words: We count confidently upon you to rouse, and it should not be difficult, the deep-seated spirit of humanity that permeates this Northern Continent of America — to rouse that soul of your people to translate itself into terms of hard cash; as an earnest that those who cannot fight will pay, and that, if it be the will of God that wars shall continue in this imperfect world, then you are determined to relieve and mitigate its horrors for its victims to the utmost of your power.

And may I add that if, in any way whatever, you care to ask the British Red Cross for the benefit of its experience in any quarter of the world during the tragic period through which we have passed, I am authorized to say that it will be promptly and gladly given; no longer to our "cousins," as we used affectionately to call you, but to our brothers and sisters united by a thousand ties, but none closer than that of an overmastering passion to join hands in drawing a great net of mercy through an ocean of unspeakable pain.



Photograph by Kadel and Herbert

THE DAUGHTERS OF FLANDERS' SLAIN

Suffering has stamped Tragedy on many of these faces which should reflect only Joy, the natural heritage of childhood. It is a pathetic coincidence that in their march formation these little derelicts of war should suggest the lock-step, once customary in our penal institutions.

Photograph from Harriet Chalmers Adams

A CORNER OF THE DINING-ROOM FOR WOUNDED SOLDIERS: LYON HOSPITAL IN 1917

In the multifold activities engendered by war woman has many spheres of usefulness, but none where her labors are more fruitful than in cheering and comforting the convalescent. A hospital dining-room would be a dreary place indeed were it not for her presence. The atmosphere of home is brought by her to the otherwise desolate places of earth.

BELGIUM'S PLIGHT

BY JOHN H. GADE

OF THE AMERICAN COMMISSION FOR RELIEF IN BELGIUM

YOUR brothers tell you their sons lie dead. Your heart aches and you try to understand it. You feel it—you think you feel it.

But it is not your son and you have no conception, even though he be one of the nearest in the world to you, of what your brother feels. It is your brother's son who lies dead. In six months, in three months, in one month your own son lies dead. It is for you to bring before this country now what it feels like to have your own son lying dead there.

You are about to issue the S. O. S. call to this country, to save it to a certain extent from ignorance, but also from indifference, and also from carelessness, from selfishness.

I come from northern France, from southern Belgium, from the gallant strongholds in that great district. There firm virtues were the order of the day; stern mercies were before you from hour to hour, and the flames of chivalry still burn in the hearts of men and women. The horizon was dark, and it is difficult to bring it to this country.

REFLECTIONS OF ONE BACK FROM BELGIUM

When I came ashore, it struck me like a blow in the face. Is it possible this is the same planet on which I have lived; that this is the same world? Have I left the basic reality of things behind for the rudiments of life?

Where do these people get all the

Photograph from Kadel and Herbert

FLEMISH WAR ORPHANS AT VERSAILLES

Happily, the heart of youth responds quickly to sympathy and tender care. The gift of a doll will oft-times erase from the mind of a child memories of scenes which would sear forever the soul of an adult. These little refugees from Belgium are being nursed back to the normal life of childhood after having undergone experiences of incalculable hardship and misery.

things in the shop windows? Why do they look so careless and disinterested instead of so serious and earnest and sober? Where do they get the automobiles, the tires, the boots, the shoes?

No; I have left the real world beyond. The artificialities of life are gone; the conventionalities have been washed away, and here I have come back to where they still look the truth between the eyes.

Every man and every woman was a worker there. I remember one day going through the streets of Brussels. We had recently opened a soup kitchen. We had the pots; we had the pans; we had the kitchen; we had the food; we had everything except the workers.

I walked down the street and saw a couple of servants waiting in front of a building, and I asked, "What is going on inside?" They told me there was a meeting of the noble women of Brussels.

I went inside, and as soon as I entered they recognized me. I said, "I need twenty or more women right away—five to wash the floors, five to ladle soup, five to take away the dishes, five to carry out the garbage, and the remainder to do whatever work there is left."

I had scarcely finished my demand before the response came, almost as quickly as the appeal. There those women have been working for the last eight months, not once a week, but seven days a week. Those are the noble women of Belgium, noble of heart as well as of birth.

You have got to bring home here to our people conditions as they are. You have got to give them the vision. How awful the conditions are no one realizes. I will give you a single picture.

THE WOES OF SLAVERY

I will take the 18th of November of last year. A week or so before that a placard was placed on the walls telling my capital city of Mons that in seven days all the men of that city who were not clergymen, who were not priests, who did not belong to the city council, would be deported.

At half past five, in the gray of the morning on the 18th of November, they walked out, six thousand two hundred men at Mons, myself and another leading them down the cobblestones of the street and out where the rioting would be less than in the great city, with the soldiers on each side, with bayonets fixed, with the women held back.

The degradation of it! The degradation of it as they walked into this great market square, where the pens were erected, exactly as if they were cattle—all the great men of that province—the lawyers, the statesmen, the heads of the trades, the men that had made the capital of Hainaut glorious during the last twenty years.

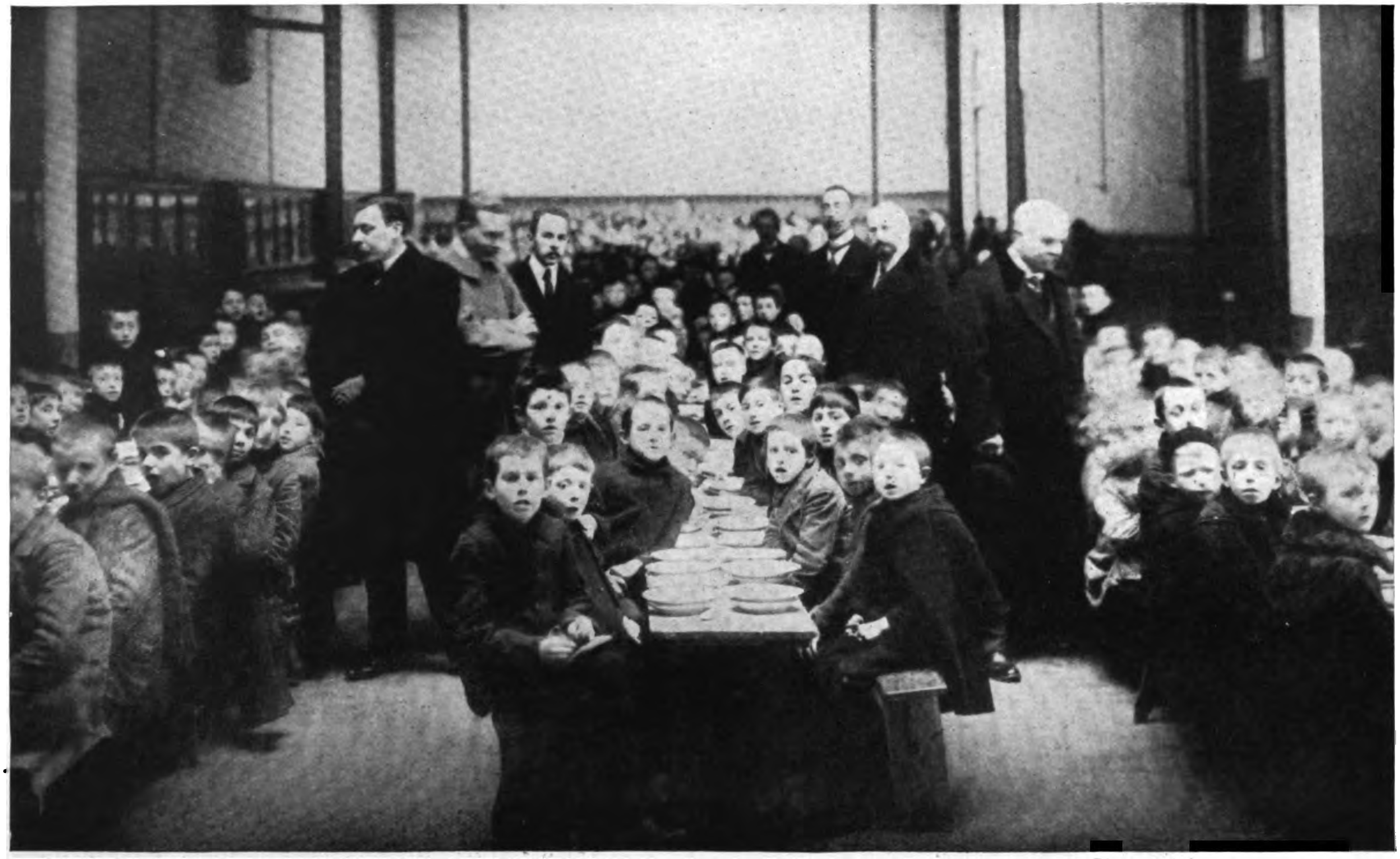
There they were collected; no question of who they were, whether they were busy or what they were doing or what their position in life. "Go to the right! Go to the left! Go to the right!" So they were turned to the one side or the other.

Trains were standing there ready, steaming, to take them to Germany. You saw on the one side the one brother taken, the other brother left. A hasty embrace and they were separated and gone. You had here a man on his knees before a German officer, pleading and begging to take his old father's place; that was all. The father went and the son stayed. They were packed in those trains that were waiting there.

You saw the women in hundreds, with bundles in their hands, beseeching to be permitted to approach the trains, to give their men the last that they had in life between themselves and starvation — a small bundle of clothing to keep them warm on their way to Germany. You saw women approach with a bundle that had been purchased by the sale of the last of their household effects. Not one was allowed to approach to give her man the warm pair of stockings or the warm jacket so there might be some chance of his reaching there. Off they went!

AT THE BIER OF A CITY

I returned to Mons that evening. You have sat at the funeral of your dear sons and you have heard the family weep, but you have never sat at the funeral of a city. I went in and I lost courage. I walked the streets of Mons all that evening.



Photograph from Paul Thompson

MEAL-TIME FOR LITTLE BELGIANS

The task of caring for the orphaned children of ravaged Belgium has, perforce, passed out of the jurisdiction of the American Commission for Relief in Belgium; but American contributions are still vitally essential to the continuance of this noble charity, and the funds are effectually disbursed for this cause through the agency of the American Red Cross.

There was not a street, there was not an alley, where the shrieking of women did not deafen your ears.

So they went. Then we saw them come back, too. I read the reports the next day in the paper at Brussels of how Germany had announced to the United States that, in her great mercy, she was taking the idle working men of Belgium in order that they might earn enough in Germany to keep their families provided with plenty of funds back in Belgium. Yes, I read this, and every other edict issued by Germany, and I found no truth in them.

I saw them come back in the cars. We carried the corpses out of the cars; we carried the poor, broken wretches to the hospitals after three weeks of work in Germany.

They took me out to the front and I tried to get through. It was impossible. They did not want me to learn the truth. But I got a man through and back to me, and he told me what they did, what they had done with the men there. They tried to put them in the trenches and make them dig. What had been the result?

THE UNCONQUERABLE COURAGE OF MARTYRS

Those men, filled with love for their country, refused to work; so they took twelve of the best of them and tied their hands to posts outside of the city and let them hang there for thirty-two hours without nourishment, and then they fainted or died rather than fight against their brothers in the trenches! That is just one of the stories of the courage of those men over there!

I see them again across those terrible swamps, up to their waists in the mire and dirt, shot at with blank cartridges in order to make them sign the contracts so that Germany might publish to the world that they were willing workers; that they had come from Belgium to Germany in order to execute the work they needed so much.

It is for you to bring these scenes before the public. You cannot all fight, but you can bring these scenes before the public and help those who do fight.

I will tell you about one man who stood beside me in Valenciennes. He came to me in the early morning and said, "I cannot work any more; I have got to leave."

I said, "You are the captain of your own soul. You know what you are doing."

"Yes," he said, "I have stood this as long as I can; I have got to quit." So he quit and left the work because it was too horrible.

What is the sequel? Today, in these early spring days, he is leading his British soldiers into battle because he preferred to fight rather than to see the German officers opposite him, with his hands tied. He fights the hardest because he is once more approaching that little country which he loves so much.

ARE WE "THE MOST GENEROUS PEOPLE IN THE WORLD?"

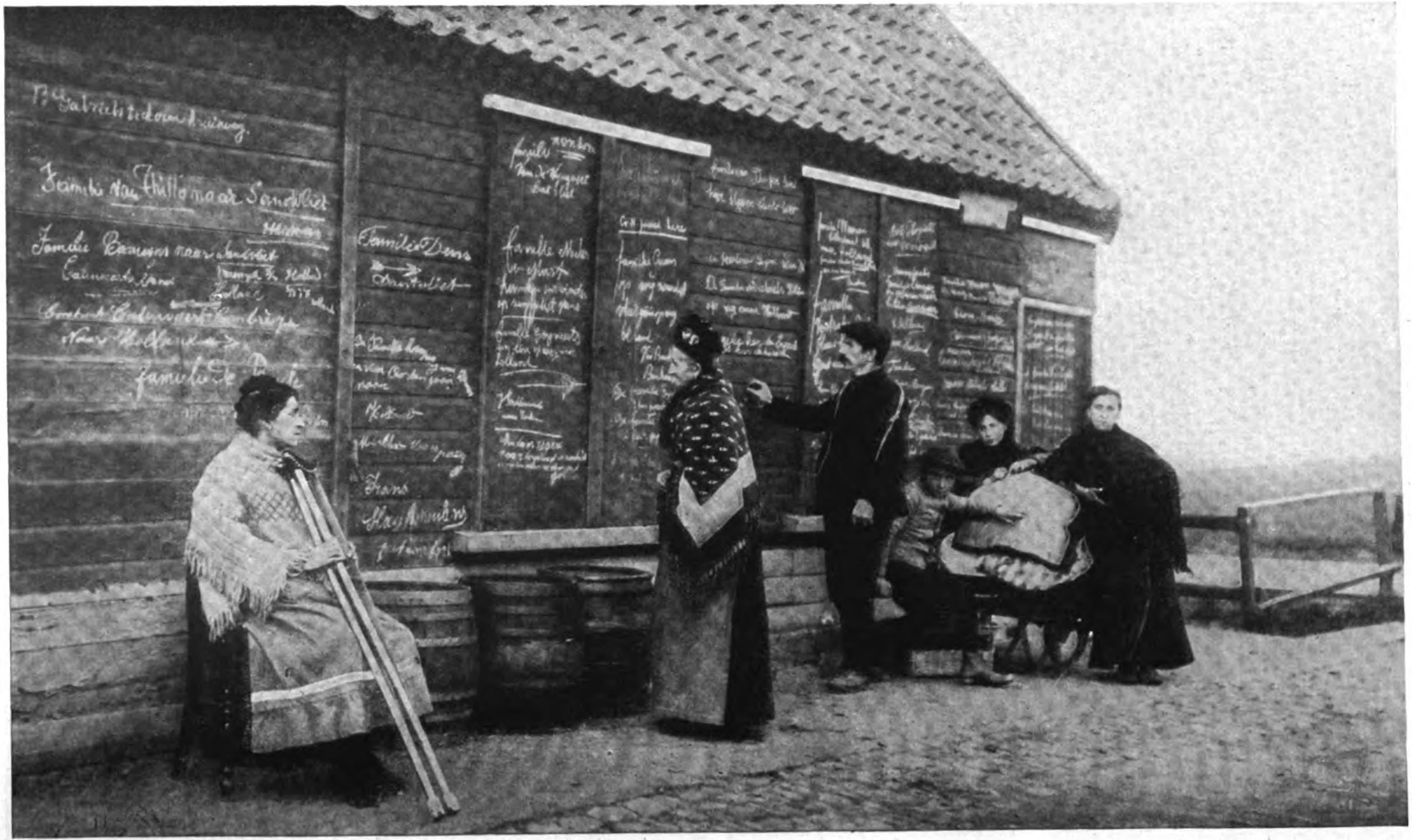
You are going to make an appeal to this country. You are starting to do so. On behalf of the Commission for Relief in Belgium, six or seven weeks ago, I talked one day in Boston. After the meeting the Bishop of Massachusetts was so kind as to say he would come to the house where I was going to dine that evening.

You are as well acquainted with the fact as I am that the Bishop of Massachusetts made the most successful appeal to this country ever made in the raising of church pension funds. The task was believed impossible—that task in which he succeeded beyond the sum which even he expected to raise.

He turned to me that evening and his first words were these: "You are going to have the best time of your life appealing to this country for funds. You are going to deal with the most generous people in the world, and you are going to deal with their best impulses."

I have found it to be the case! I approached with hesitancy, with timidity. I am no speaker, least of all one who can make a successful appeal, especially to those I have known best. When I asked for hundreds, I received thousands. When I asked for thousands, I received tens of thousands.

It showed me that our people are alive to the fact that now they must give, and give with both hands; that now no longer



BELGIAN FUGITIVES INSCRIBE THEIR ADDRESSES ALONG THE WAY

Driven from their homes and forced to flee almost without warning, parents and children were often hopelessly separated. To facilitate a reunion in the land of their exile, names and directions were written on every available space along the route of flight. The story of the exodus was written in chalk in a manner singularly effective and strikingly expressive.

those who cannot enter the conflict should stand aside and shame their country. I was dumbfounded at the response I received from all sides, from high and from low.

"FIVE KIDS OF MY OWN, BUT READY TO HELP"

Again and again I appealed in behalf of the children, and some working man in his embarrassment would arise in the throng and finally would bravely say, "Well, I have got five kids of my own, but I can take on another one if you want me to." That was the response from all sides.

I remember one day in particular. When I went to my work that morning a friend said to me, "You look rather discouraged this morning." "Yes," I said, "I see no hope in the situation today." He said, "You will never be discouraged if you will follow the Great Captain the way I do." That was, of course, the response of the Bishop of Massachusetts, given to me in that way.

It seemed an almost impossible, hopeless task to raise these hundreds of thousands of dollars, but he said: "It seems very easy after you have gotten frankly into the hearts of the people, after you have taken them right into your confidence, after you visualize the situation.

"If you can visualize your work, if you can make them see the things in the battlefield, if you can make them feel and give them the vision as you have it, then you will find the response is immediate and glad. It is not only those who have been educated in giving to whom you can successfully appeal, for generosity lies in the human heart, and it is the most blessed thing man can do, to give rather than to receive."

GIVING WITH BOTH HANDS

In New York I went to see a man—one of the most influential, one of the wealthiest men of this country—to thank him for the thousands and thousands of dollars he had sent to Belgium. I gave him the figures and showed him the devastated condition of northern France and showed him the shattered fields, without a tree standing, without a fruit tree that will ever bear fruit again.

His reply was the same reply you are going again and again to receive: "What am I going to do? Belgium is closed. How can I help? I would like to help more than I did."

I replied to him, "Here is the Red Cross. It knows this work and how it is being conducted and how it should be done." He then said most promptly, "I have given with one hand before; now I am going to give with two hands!"

That is the reply which will come from all sides in this work we are now undertaking.

BIND THE WOUNDS OF FRANCE

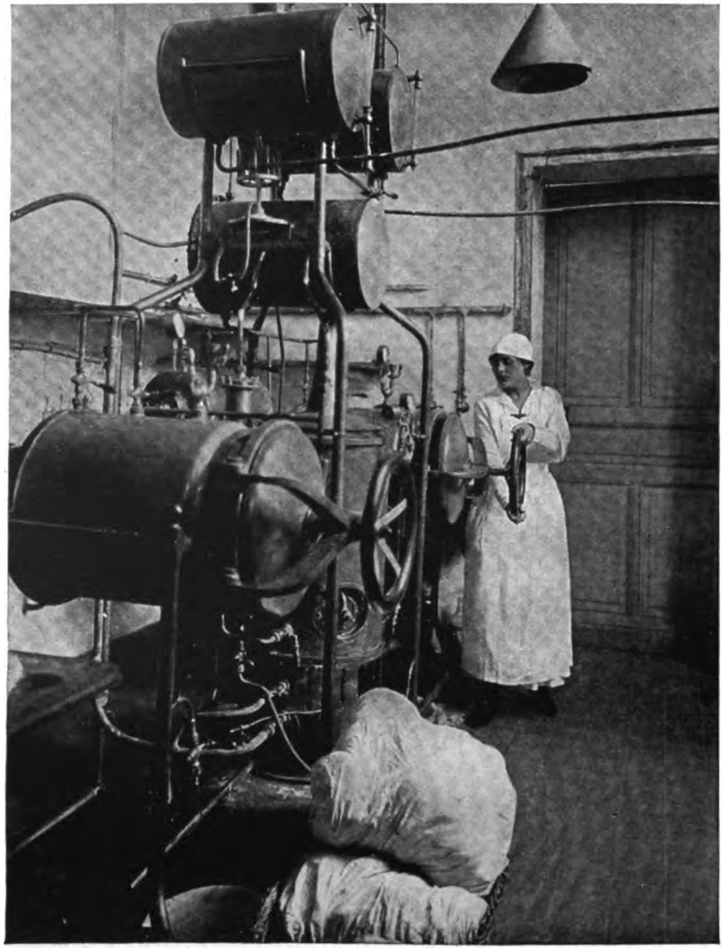
BY HERBERT C. HOOVER

CHAIRMAN OF THE COMMITTEE FOR RELIEF IN BELGIUM

I ALWAYS feel an infinite embarrassment at the reception and overestimation of the part that I may have played in what is really an institutional engine, and the credit for which belongs, not to myself, but to some fifty thousand volunteers who have worked for a period now of nearly three years.

During the whole of this period we have had as one of our duties the care of the civilian population in northern France. We are, I think, the only Americans who have been in intimate contact or even in any contact with that imprisoned population. We are the only group who know of their suffering, of their misery, of their destruction, and who know of what confronts those people even after peace.

We have always entertained the hope that possibly some other engine, some other organization, might be found that could adequately take in hand their wounds and bind up their difficulties, re-



THE STERILIZING CHAMBER IN THE AMERICAN HOSPITAL AT NEUILLY

Such apparatus must be multiplied many times if American soldiers are to be safeguarded from the dangers of septic poisoning. The Red Cross has the facilities for installing these sterilizing chambers, provided the American citizen will contribute the sums necessary for their purchase.

IN THE WONDERFUL AMERICAN HOSPITAL AT NEUILLY: A NURSE CLEANING HER INSTRUMENTS

We may well feel proud of the hospitals which American philanthropists of both large and small means gave to France before our government joined military forces with the Allies. Both in equipment and in management these institutions mark the highest achievements in surgical science. Photographs by Paul Thompson.

habilitate them into a position again of self-support.

That is probably the greatest problem of all the war. There is an untold destruction of property, a total displacement of population, an enormous loss of human life, a loss of animals, a loss of implements — a population of probably three millions of people totally and absolutely unable to get back onto their feet without help.

WHERE ONLY THE VULTURE COULD LIVE

About the end of March the retreat of the German army over a small area opened up to the world a vision of what had really happened to the three millions. It was but a little parcel in France that was recovered, with a population of only 30,000 people.

I had visited that area from behind the lines and again visited it from the Allies' side. I found that every village, with the exception of two small areas, had been totally destroyed.

The Germans had erected battering rams, had destroyed and burned villages, had leveled everything to the ground, had gathered up all the agricultural implements in open squares and burned them, had taken all the animals, and had removed all the male portion of the population between the ages of 18 and 65 years.

Even the fruit trees have been destroyed, and that entire section, of probably 60 miles in length and over 20 or 25 miles in depth, has been devastated to such an extent that those people cannot get back onto their feet without an entire replacement of all of the engines by which production is carried on.

This is but a sample of what we have to expect from practically the entire area. The cost of rehabilitation runs into figures which should startle all except Americans, and perhaps Americans even in the larger figures in which we have begun to think.

THE DAMAGE RUNS INTO BILLIONS

I made a rough estimate of the immediate amount of money required to rehabilitate that little parcel of population and to support them for one year; to provide them with their implements, to give them the roughest kind of housing, to get them back to the point where they may get the land into cultivation and get into self-support, would run somewhere from seven to ten millions of dollars.

Altogether the north of France is probably faced with a total expenditure for rehabilitation which will reach a billion and a half dollars.

There are other problems in France also demanding immediate help. Tuberculosis from exposure in the trenches, from a population in many sections partially undernourished, has spread to the most alarming degree. The French, busy and intent upon the war, with limited resources, have not neglected the problem; but they need help, they need sanitary support, and they need care and direction. I am informed that there has been an increase above normal in tubercular cases in France, in the men alone, of over 600,000.

There is still a further field in France, and that is the children. The orphans of France increase day by day. That service is one which probably touches more nearly to the heart of every American than any other we can do.

BLEEDING FRANCE ON LIBERTY'S PYRE

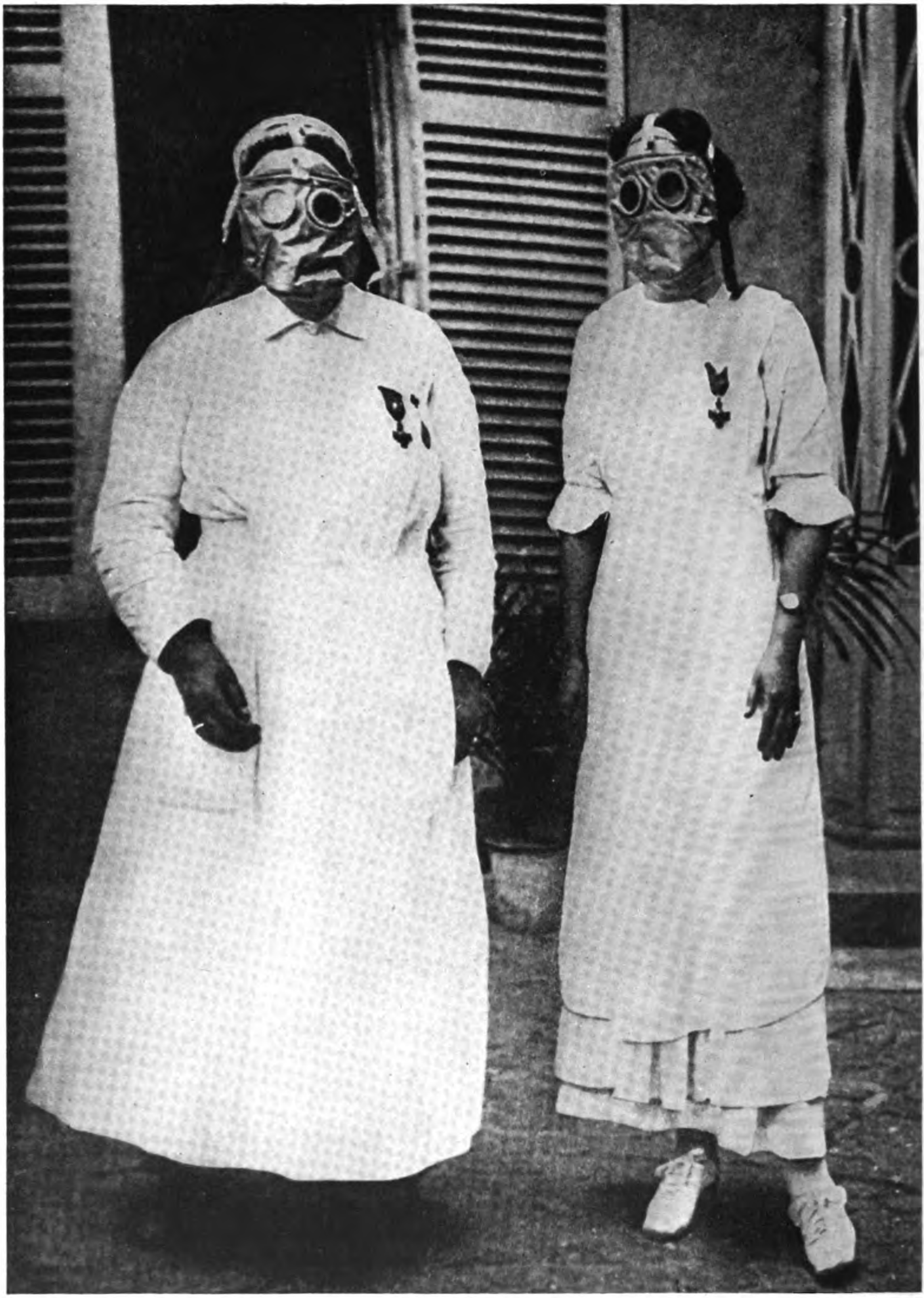
On the children of France rests absolutely the hope of France, because today France is sacrificing her manhood on a pyre devoted to liberty and a pyre devoted to our protection.

In these three problems the American people have an outlet for all of their generosity, for all their capacity of organization, and that has never before been presented to them.

The problem of Belgium is a problem much the same as France, but a problem of much less dimensions, so far as we see it today.

If the Red Cross could now consolidate the whole of effort directed toward civilian charity to civilian support in France, it would have laid the foundation for probably the greatest work which the American people must undertake as one of the aftermath results of the whole war.

I have long had the feeling that all civilian charities in Europe should be better organized and better consolidated



Photograph by Paul Thompson

THE HOSPITALS ARE NOT SPARED

These nurses, both of whom have been decorated for bravery, perform their acts of mercy in the front line clearing hospital. Poisonous gas is no respecter of the Red Cross, so it is necessary for the young women to wear the same protective masks which the fighting men use in warding off the fatal fumes released by the Germans.

Photograph by Paul Thompson

SURGICAL DRESSING-ROOM, NURSES, AND INTERNE IN U. S. ARMY HOSPITAL RAILWAY CAR

Every facility for performing emergency operations en route from a battlefield to a base hospital is provided in these modern operating rooms on wheels

in the United States. We have had a multitude of bodies engaged in that effort, a multitude of overlapping effort, a multitude of overlapping in collection of support, and a multitude of overlapping in distribution on the other side.

HELPING HEROIC PEOPLE HELP THEMSELVES

Furthermore, as the war goes on, as times become harder, we will require a greater and a better organized effort in order to maintain that support. It requires an effort that not only covers the field of charity, but also covers the field of helpful finance. I do not think that any thinking person wishes to pauperize a population by pouring charity upon them.

We ourselves have undertaken to do some rehabilitating and have made some study of that subject, which is only one of the three great problems.

We have developed a method by which we believe that these people may be put back on their feet and made self-supporting again. If perhaps only 10 or 15 per cent of the total cost may be founded in charity, these people themselves will repay the entire cost of their reconstitution. They must be given time. The 80 per cent may be accomplished by financial measures, but some one has to provide the first 10 or 15 per cent to give the foundation for any adequate development of that problem.

Since coming to America I have had a number of discussions with your officials, and I have urged upon them, and they are only too glad to undertake, that problem as the problem of the Red Cross.

The Red Cross is perhaps founded

LUNCHEON HOUR FOR THE NURSES IN THE AMERICAN HOSPITAL AT PARIS

No American undertaking in France since the beginning of the European war has received or deserved more enthusiastic endorsement than this great institution, which daily is mending the maimed who are rushed here from the trenches in Flanders.

fundamentally for the care and comfort of soldiers, but we are not fighting this war alone for the direct efficiency of battle. We are fighting here for infinitely greater objectives, and there is no support that can be given to the American ideal, to the American objective of this war, better and greater than a proper organization of that side of our civilization which we believe is today imperiled.

We are fighting against an enemy who had become dominated with a philosophy, with an idea, for which there is no room in this world with us. It is a nation obsessed with the single idea that survival of the strong warrants any action, demands any submergence of the individual to the state, which justifies their mastery of the world.

Our contention of civilization lies in the tempering of the struggle for existence by the care of the helpless. The survival of the strong, the development of the individual, must be tempered, or else we return two thousand years in our civilization.

While the Red Cross devotes itself to the strengthening of the strong, to the support of the soldier, it is a duty of the Red Cross to illume that part of American character and American ideal which stands for the care of the helpless.

I had hoped, and I think that all of your officials had hoped, that it would be possible to now congregate the strength of the whole nation into the Red Cross in order that it might undertake this, possibly the greatest work which we have yet to perform, and that is to bind the wounds of France!

DEVASTATED POLAND

By Frederick Walcott

I WANT to impress upon you two things — what the Prussian system stands for, and what that system is costing the world in innocent victims.

You are all familiar, more or less, with the story of Belgium. You can never appreciate what that tragedy means until you have seen it. I want to stop just a moment in Belgium to give you two or three figures to take away with you, and pay a tribute to an organization that has been supreme there ever since the war began.

You must remember that in Belgium nearly five millions of people for many months now have been completely destitute and are getting their one meager meal per day, consisting of approximately three hundred grams of bread—a piece of bread about as big as my fist—and a half liter of soup—approximately a pint of soup in 24 hours; a nation, in other words, whose sole living is obtained by going up and standing in line from one to three or four or five hours a day, to wait, without shelter from the weather, for one meager meal a day given to them by charity.

That undertaking has cost approximately fifteen millions of dollars per month in cash for more than two years. Ninety-five per cent of that money is being contributed by the English and French governments.

It takes between 50,000 and 60,000 people, most of them volunteer Belgians and French in Belgium and in that occupied territory of northern France, to distribute this food; and that great undertaking is being supervised by a small group of loyal Americans, who have been working from the beginning without pay under the leadership of an inspired genius, Mr. Herbert C. Hoover.

BORN AND BRED TO THE HARDENED HEART

I went into Belgium to investigate conditions, and while there I had opportunities to talk with the leading German officials. Among others I had a talk one day with Governor General von Bissing, who died three or four weeks ago, a man 72 or 73 years old, a man steeped in the "system," born and bred to the hardening of the heart which that philosophy develops. There ought to be some new word coined for the process that a man's heart undergoes when it becomes steeped in that system.

I said to him, "Governor, what are you going to do if England and France stop giving these people money to purchase food?"

He said, "We have got that all worked out and have had it worked out for weeks, because we have expected this system to break down at any time."

He went on to say, "Starvation will grip these people in 30 to 60 days. Starvation is a compelling force, and we would use that force to compel the Belgian workingmen, many of them very skilled, to go into Germany to replace the Germans, so that they could go to the front and fight against the English and the French.

"As fast as our railway transportation could carry them, we would transport thousands of others that would be fit for agricultural work, across Europe down into southeastern Europe, into Mesopotamia, where we have huge, splendid irrigation works. All that land needs is water and it will blossom like the rose.

RIDDING THE LAND OF THE WEAK

"The weak remaining, the old and the young, we would concentrate opposite the firing line, and put firing squads back of them, and force them through that line, so that the English and French could take care of their own people."

It was a perfectly simple, direct, frank reasoning. It meant that the German Government would use any force in the destruction of any people not its own to further its own ends.

I had never thought in such terms. I had read von Bernhardi and others, but I did not believe them, and the whole point of view was new; but gradually the truth of it all began to dawn upon me.

After that some German officials asked if I would not go to Poland, because there the situation had gotten the best of them. There some three millions of people would die of starvation and exposure if not fed between then, a year ago, and the next crop, last October. They said, "If that thing goes on and on, it will demoralize our troops." Again that practical reasoning.

I hurried into Poland under the guidance and always in the company of German officers, many of them very high officers, men on the general staff.

I want briefly to give you a word picture of what I saw there, and again drive home the point of what that system stands for. Picture Poland, that country beween Russia and East Prussia, looking like a man's foot, with the foot pointed toward East Prussia.

In the fall of 1914 the Russian offensive had successfully driven the Germans back almost to East Prussia. There they dug themselves in for the winter, two and one-half millions of Russians and two and one-half millions of Germans, in a north and south line nearly 300 miles long, from East Prussia to the north and down to Galicia.

WHEN RUSSIA'S VERDUN FELL

It took ten months for the Germans to prepare the greatest offensive that has ever been known in military times, under General von Hindenburg. They anticipated that in the retreat that might follow every railroad bridge would be destroyed, the railroads would be torn up, the highways and culverts and everything would be gone, and they must make a supreme effort to be ready for all these contingencies. That started in August, 1915.

By the collapse of their great fortification at Lodz, the "Verdun" of the Russian line, about 50 miles west of Warsaw, which stood there as a bulwark supporting Russia and Poland against any inroads by the Prussians, the situation was changed.

That fortification had been built eight or ten years back by money which the Russians had borrowed from the French Government. I spent the entire day out there. It took only five shots from the huge howitzer, "Fat Bertha," named for Miss Bertha Krupp, that throws a shell weighing 1,900 pounds, with an effective range of 22 miles, to completely demolish that magnificent fortification.

The gun was located on a concrete foundation 13 miles away from one of the principal forts—the one that contained the most munitions. They knew twenty millions of marks' worth of provisions were in that warehouse. They knew exactly how much ammunition was in each one of the twenty-six forts in a semicircle facing Prussia, and they picked out the one that contained the greatest quantity. Then they fired four shots, each one of which went astray.

Each one made a crater in that field, a place 150 feet in diameter and 30 or 35 feet deep.

THE UNPRECEDENTED POWER OF THE BUSY BERTHAS

The fifth, getting the range by aëroplane, struck the center of that fortification, and the combined explosion of that shell with the explosion of the ammunition in the firing pits, detonated by the explosion of the shell, threw chunks of concrete one-fourth the size of a big room out into the field as if they were paper, turned over those six- and eight-inch guns, mounted on their heavy carriages, with 15-inch steel turrets over them, and dumped them out in the field as if they were nothing.

I went around through some of the firing pits that were more or less intact, and there the German officer pointed out to me the forms of men against the concrete.

He said 450 men were killed instantly; that in some of the firing pits they were plastered up against the wall and flattened as flies would be against a windowpane, so that they had to spade the bodies off.

The whole Russian line collapsed with the surrender of that fortification. The commandant of the Russians telephoned to the German commander and said, "We will surrender the fortification if you will stop firing."

"No," he said, "not until you have sur-

Photograph by Paul Thompson

SISTERS IN THE ARISTOCRACY OF SERVICE TO MANKIND

Many American girls are already serving in the hospitals of France, and the number will have been enormously increased before General Pershing's expeditionary force goes into action. In this illustration are shown the daughter of a prominent New York capitalist and a member of the British royal family at work in the American Hospital in Paris.

rendered all your men; and if you burn that warehouse we will not take your men alive."

"It is all yours." And it was all over with the Russians in Russian Poland. That Russian line, 300 miles long, swept across Russian Poland and clear into Russia before it stopped, trying every now and then to resist, but failing, continued its retreat.

That gray mass of men traversed three great military highways, fighting along the southern road commencing 30 miles west of Warsaw and going 230 miles toward Moscow, clear into Russia, covering an area three times the size of New York State and nearly three times the size of New England, excepting Maine, containing fifteen millions of Poles.

AN EMPIRE LAID WASTE

I motored along those roads, the two running toward Petrograd and the one toward Moscow. They are all in very much the same condition. The German officers and the Poles who were with me,

Photograph by Stanley Washburn

THE EXODUS FROM POLAND

Fleeing from their homes to escape the ruthless fury of the conqueror, thousands of these unfortunates died of starvation, leaving their bodies upon the roadside to mark the line of march of a stricken people; and those responsible for this great crime with ruthless thrift gathered the bones of their victims to fertilize the fields which the dead had once called home-land.

with whom I consulted, agreed in this estimate, that in about six weeks time, a year ago last fall, approximately one million people along that southern road were made homeless by the burning of their dwellings, and of this one million people at least four hundred thousand died in the flight along that one road.

Of the balance approximately half were saved and gathered by the Germans later into refugee camps, and today, according to the Central Relief Committee of Poland, approximately seven hundred and fifty thousand of those miserable refugees who escaped with the Russian army are now in Russia, many of them in Siberia, and more dead than alive.

HUMAN BONES FOR FERTILIZER!

It is those people whom the committee has been trying to relieve, because nobody has been able to get food or help into Russian Poland proper, with the exception of one undertaking of the Rockefeller Foundation.

As I motored along that road, only a few weeks after that terrible retreat, I began to realize something of what had happened. Both sides of the road were completely lined for the whole 230 miles with mud-covered and rain-soaked clothing. The bones had been cleaned by the crows, which are in that country by countless thousands. It is a rich alluvial country. Three-quarters of the people are agriculturists and one-quarter industrial.

The Prussians had come along and gathered up the larger bones, because they were useful to them as phosphates and fertilizer. The little finger bones and toe bones were still there with the rags of clothing.

The little wicker baby baskets, that hold the baby as he swings by a rope or chain from the rafters of the peasant's cottage, were there by hundreds upon hundreds. I started counting them for the first mile or two and gave up in despair, because there were so many.

Photograph by Stanley Washburn

POLISH JEWS LOOKING FOR A NEW HOME

These wanderers in a wilderness of woe, like their forebears in Palestine, have a pillar of fire to guide them by night; but it is to guide them away from their homes, kindled by the torch of war, instead of a flame to pilot them to a Land of Promise.

We began to investigate the conditions of those who were still alive, those refugees who were homeless. We saw no buildings in that whole 230 miles. Everything had been destroyed; nothing but the bare chimney, black and charred, was standing; no live stock, no farm implements, in all that vast area.

I saw with my own eyes between fifty and sixty thousand of the six or seven hundred thousand of those refugees who had been gathered together, about a thousand to a building, in rude, hardly weather-proof barracks hurriedly put up by the Germans.

A STATE OF INDESCRIBABLE WOE

There they were, lying on the ground in broken families, getting one starvation ration a day, dying of disease and hunger and exposure. The buttons from their clothing were gone; their clothes had to be sewed on.

When I saw them they had not had their clothes off for weeks. There were no conveniences of life. They were in a state of bodily filth that is indescribable.

Going back to the cities, where the destruction was not so awful, we saw little people and grown people, mothers and children, sitting on the sidewalk, leaning against a building, sometimes covered with snow or rain-soaked, too weak to lift their hands to take the money or bread that we might offer them.

All the wealthy people of Poland were giving everything they owned to save their nation.

One day one of the Poles, the head of the great Central Relief Committee of Poland, a wonderful man, wealthy before the war, but who has given everything he possessed to save his people, showed me a proclamation and translated it for me. It was written in Polish and I could not read it. It was signed by the German Governor-General, and the significance of it was this: It was made a misdemeanor for any Pole having food to give it to any other able-bodied Pole who would refuse to go into Germany to work.

That meant that this "system" had put it up to the head of any of the various families to go into voluntary slavery in

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IN FRONT OF THE BELGRADE MISSION OF THE RED CROSS UNIT IN SERBIA

Germany, knowing that he could not hear from his family or communicate with them, knowing that he would be back of a barbed-wire barricade with an armed guard to keep him from escaping, with one blanket to sleep in on the factory floor at night; knowing that the money he earned would be taken for the food he ate, leaving his family in starvation.

"STARVATION A GREAT FORCE"

I took this matter up with the Governor-General and asked him what it meant.

He said, "I do not know; I have to sign so many of those things; but," he continued, "go to the Governor-General of the Warsaw district and he will tell you the whole story."

I went there in a rage, and when he told me that those were the facts, I got up and said: "General, I cannot discuss this thing with you; it is worse than anything I ever heard of. I did not suppose any civilized nation would be guilty of such a thing as this"; and I started to walk out.

He said, "Wait a minute: I want to explain this thing to you. We do not look at it as you do. Starvation is a great force, and if we can use that to the advantage of the German Government we are going to use it.

"Furthermore, this is a rich alluvial country. We have wanted it and needed it for a long time, and if these people die off through starvation, perhaps a lot of German people will overflow into this country and settle here; and after the war, if we have to give up Poland, the question of the liberty of Poland will be solved forever, because it will be a German province."

STILL THE "SYSTEM"!

Still the reasoning of that "system"! As I walked out, General von Bernhardi came into the room, an expert artilleryman, a professor in one of their war colleges. I met him the next morning, and he asked me if I had read his book, "Germany in the Next War."

I said I had. He said, "Do you know, my friends nearly ran me out of the

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CRUDE AND SPRINGLESS AMBULANCES ON THE RUSSIAN FRONT

A conveyance of any kind was a luxury for the Russian wounded after the fall of Warsaw. Compared with 64,000 ambulances on the 400-mile front in France, Russia has only 6,000 ambulances to serve the wounded on a front of 1,000 miles.

country for that. They said, 'You have let the cat out of the bag.' I said, 'No, I have not, because nobody will believe it.' What did you think of it?"

I said, "General, I did not believe a word of it when I read it, but I now feel that you did not tell the whole truth"; and the old general looked actually pleased.

What is true in Poland is true in Serbia and in Roumania. In Serbia approximately three-quarters of a million people have died miserably. A German captain who had been there three months, in that campaign through Serbia, told me that he saw the Bulgarian soldiers killing innocent men and women and children along the road with their bayonets; that it got too much even for him, and he could not stand it and came back. He said they had typhus in every city he visited in Poland.

In Roumania practically six hundred thousand people have been murdered in cold blood by the Turks. All the armed forces in that country are officered by Germans, so they are in a sense guilty of that, too; they are parties to it.

A MAD DOG AMONG NATIONS

There is a wild dog, a mad dog, loose. That system has become so ingrown that it threatens to involve the German people themselves. I tell you, ladies and gentlemen, it is worth while, if it costs everything in the world, to stop that system!

Ever since the signing of the Declaration of Independence we have welcomed people who have come to these shores to get away from religious and political persecution. They have come here to enjoy life and liberty and the pursuit of happiness. I hope and we all hope that these shores always will welcome those people.

The people that came here, particularly the Germans that came in 1848 and the two or three years following, and in 1872 and thereafter, knew why they came, and now we know why they came. For two years we have been suspicious of the

Photograph from Brown Brothers

AN AMERICAN AMBULANCE ROLLING THROUGH A RUINED TOWN IN FRANCE

The locomotive engineers of one of our great Western railway systems have asked their general manager to deduct from their wages during the period of the war a voluntary contribution of fifty cents a month. There are 450,000 men in the train service, and that would mean a substantial contribution to the Red Cross.

hyphen, but it behooves us, as a free, liberty-loving people, to get over that suspicion, to dispel from our hearts rancor and hatred, because the fire of Americanism has fused that hyphen in an incredibly short time, and we must assume that the German-American today is one with us, and that free America, with all its citizenship, is going in whole-heartedly, with money and with men, to fight for a free world.

NO TIME TO COUNT THE COST

What is that going to cost us? We must not count the cost, though that cost will be terrific. It has already overwhelmed the nations of Europe. The blood and the travail of Europe thus far, terrible as it has been, may be justified by the birth of a great nation, the United States of Russia, and I pray God devoutly that the last stages of this war, terrible as they are going to be, awful as will be the cost, may be justified by the birth of another great nation, the United States of Germany!

It devolves upon this great organization, the American Red Cross, first to heal the suffering of the combatants, first to look after our soldiers and to help the soldiers of our allies.

But after that, do not let us forget our duty to the innocent victims in this war, because after this war the nations that have been belligerents and engaged in the war are going to be so seriously crippled that they will have to give all their strength to recuperation. They cannot give to their people.

It is going to devolve upon this nation to go in there, remembering our duty, remembering the fate of Belgium and Poland, to resuscitate those people and give them hope and prove to them that there is a God in Heaven, and that liberty is worth any price!

Photograph from Brown Brothers

CONVOY OF TRUCKS PASSING THROUGH A WRECKED VILLAGE NEAR VERDUN

"Within a few months we should and will have in service an army of 1,000,000 and a navy of 150,000 men. These men must have our best. To prepare against their needs in advance will be a stupendous task which the Red Cross must undertake."

AMERICA'S DUTY

By Newton D. Baker, Secretary of War

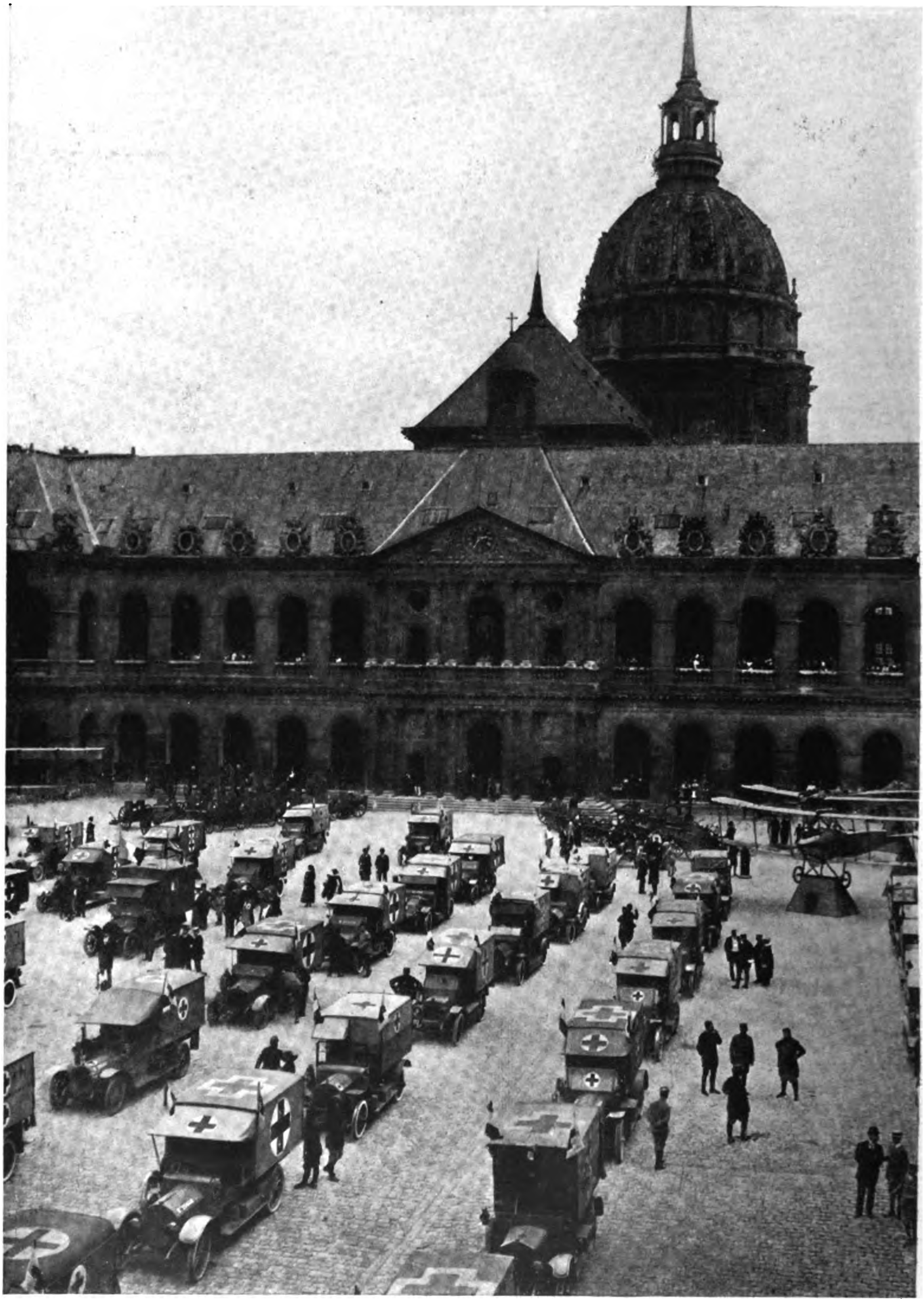
I SHALL not attempt to describe the size of our American duty beyond saying that the human race is a waif left to die unless we, as trustees, accept the task of rescuing it.

I suppose there has not been, since the very early times in human history, a war in which slaughter was so casual as it is in this. Of course, there has not been in recorded human history a war in which slaughter was so tremendous in its proportions as in this war.

I speak of its casual character because for a great many hundred years we have been progressing in the direction of limiting the horrors of war to the combatants, and that in this twentieth century we should revert to the casual slaughter of children, to the improvident slaughter of women, to the theory of warfare by the extermination of peoples, and to the use of weapons of war like starvation and disease—for both of them have become weapons of war—is an unthinkable reversion to a barbarous type which it was the hope of the intelligent that the world had outgrown.

TRAGIC FIGURES IN HISTORY

But, whatever the cause, the fact remains that the suffering of the people in these warring countries is more widespread, the desolation and devastation more complete, than ever before within the knowledge of living persons; and as this mode of warfare has not spared little persons, so it has not spared little nations.



Photograph by Brown Brothers

AMBULANCE FLEET IN THE COURT OF HONOR, HOTEL DES INVALIDES: PARIS

"Just as the fighting manhood of the United States is soon to be in the trenches, so the Red Cross, which has done so much for the Allies in the past, is now eager to be mobilized in the allied Army of Mercy."

FRENCH WAR ORPHANS ON THEIR WAY TO CANNES, SOUTHERN FRANCE

Many of these children, made waifs by the world war, are assured a brighter future because they now have foster parents in America. Recently there has been organized in the United States a society each member of which assumes the financial responsibility for the care and maintenance of a particular child. Ten cents a day, or $36 a year, is all that is required to insure some innocent little war sufferer food and clothing.

Photograph by Paul Thompson

A BREAD LINE AT GHENT, BELGIUM

Our government is now advancing $7,500,000 monthly to Belgium to help feed these lines

Photograph from Harriet Chalmers Adams

BANDAGING A WOUNDED DOG

In Flanders they still "Cry 'Havoc' and let slip the dogs of war." But the dogs follow after the havoc and are not party to it. With a heroism that makes them akin to their masters, these gallant animals carry succor to the helpless and the dying who lie in no-man's land between the trenches. Heartless indeed must be the sharpshooter who can make a target of one of these dumb messengers of mercy.

I suppose that when this war comes to be written as an epic—and it will some day be written as an epic of the folly of mankind—the tragic figures in it that will persist in the imagination and memory of mankind forever will be countries like Belgium and Roumania and Poland.

America's duty! We are separated from the actual scene of this conflict by thousands of miles of sea. Our losses in it have as yet been minor. We are entering the war in the firm belief and purpose of ending it in a victory for right, and we have not the slightest intention of stopping until that victory is achieved!

Mad as the world seems to be, some day there will be reëstablished on this stricken planet a peace which will be just and wise and permanent—just in proportion as America pours out her spiritual resources in the waging of the war from now on and is heard at the conference table to challenge the attention of mankind to the beauty of righteousness among nations!

But in the meantime, as the armies which are being called are trained and are led to battle, all along the national wayside of every nation in the world still crouch the terrified and trampled figures of the children of mankind—disowned, starving, and dying.

HORRORS THAT MAKE THE STOUTEST HEARTS QUAIL

There is no limit to it, and I shall not undertake to harrow your feelings—in fact, I am not certain that I could command myself to repeat intimate letters which I have seen within the last day or two about Roumania.

But the call is limitless and it is going to be made known to the hearts of the people of the United States, and we are going to endeavor to respond to this cry of distress. The President has urged that the Red Cross be made the vehicle of our response.

Organization for any task is the more important as the task becomes larger and more serious. It requires no organization to allow one of us as an individual to buy a dinner for a hungry man. But it requires a very high degree of organization effectively and economically and wisely to administer the charities of a city. It requires a very much higher degree of organization and coördination to make effective the philanthropies of a nation.

By that same token it requires the highest degree of organization, of concentration and consecration of purpose, the most careful coöperation, the most willing harmony, the utmost centralization of effort, to deal with the woes of a world.

And so, in the interest of making effective our generous impulses, in the interest of saving just as many as we can—facing an impossible task in size, and yet seeking to save life and alleviate pain and suffering just as far as we can—the concentration of our efforts through the Red Cross, which has both a national and an international status and is managed and conducted by men of large affairs and great experience with this sort of thing, seems to be essentially demanded.

I think if anybody would ask me how much he ought to give to the Red Cross at this time I would say, "All you have." That is a counsel of perfection, I know, but then it would not be enough.

I understand the War Council has set itself the task of raising one hundred million dollars.

GIVE TILL YOU FEEL IT

That may sound to some like a large amount, and yet this war is costing in actual money every day from sixty to seventy millions of dollars, and in human life from ten to fifteen thousand of those who are killed in actual warfare, without counting those who starve and die of disease.

The Red Cross of the United States of America has set itself the great task of raising for, one might say, cosmic philanthropy a sum equal to the destruction which the war entails in a day.

I cannot further describe the size of this task. I am very happy to repeat the admonition of the President of the United States to the people that they centralize their energies. Let us have as little lost motion as possible about this great enterprise, and center our activities in this national and international agency. The response which we ought to make ought to be limited only by the extent to which our sympathy, enlightened by knowledge and stirred by imagination, and then overstepping rather than understepping the mark, will enable us to make sacrifices for the greatest need the world has ever known!

STAND BY THE SOLDIER

By Major General John J. Pershing, U. S. Army

I HAVE been requested by some of the officers of the Red Cross to say a word as to the part that organization played in our little expedition into Mexico.

Just before Christmas, an official of the Red Cross wrote me a note and asked me what the Red Cross could do for the men in Mexico.

There was not anything that we really needed, but her idea was to arouse a little enthusiasm among the members of the Red Cross by encouraging them to work for our own people; so I telegraphed her a list of things that I thought might be acceptable as Christmas presents, including cigarettes, cigarette papers, smoking tobacco, pipes, old-fashioned candy, comfort bags, bandanna handkerchiefs, pocket-knives, and perhaps a dozen articles, thinking that she would select from these some one thing to give to each man.

But she took the telegram literally, and sent word around to the various chapters

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ANDOVER ACADEMY RED CROSS UNIT OFF FOR FRANCE

These young college men, who recently sailed for Europe to do their bit in the war for liberty, will drive ambulances and do other yeomen tasks under the direction of the Red Cross in Flanders. The universities and colleges throughout the country will supply the United States Army Ambulance Corps with 1,500 picked men for service abroad. These splendid sanitary units are not to be held back until American troops reach the front, but are to be utilized by the French Government until the arrival of our own soldiers. Many young faculty members are being enrolled in this service with student bodies from California to Maine and Texas.

throughout the country, and prepared not only a comfort bag, but a comfort bag containing each and every one of those articles for each man in the division.

We arranged a Christmas tree and had various Christmas celebrations at the various camps, and those presents were distributed.

MAKE THE SOLDIERS FEEL YOU'RE BACK OF THEM

The point I wish to make is that those things cause the soldier to remember that the people at home are behind him. You do not know how much that is going to mean to us who are going abroad. You do not know how much that means to any soldier who is over there carrying the flag for his country. That is the point which should be uppermost in the minds of those who are working for the soldier.

The great work, however, for this Red Cross is to help our allies. As I understand it, the people in France need supplies of all kinds. Therefore, it is our first duty to help them rehabilitate themselves.

We must help their orphans and their widows. We must help put them in a position to produce. We must help them in every way to relieve the French nation from the drain upon it which will, in turn, be a drain upon its military resources.

Our people have not begun to realize that we are in this great war. It is all very well to write newspaper editorials about it and to talk about it on the platform; but it has not yet been impressed upon the people everywhere.

I have just come from a county where they talk to you and say, "Oh, well, we haven't lost anybody; none of our vessels has been destroyed, and we do not really feel that we are at war."

I put this question to all such men: "Now that we are in this war, do you realize that we must take the place of every man that is killed among the Allies, that we must support the widows and orphans? If we do not, who will do it?"

The representatives of business interests are the men to start this enterprise among our people and bring them to a full realization of the very grave seriousness of this war, to make them feel that we are in this war to win, and the probability is that our entering this war is going to be the deciding factor, and that the burden of the success is going to rest upon the United States.

A POISONED WORLD

By William Howard Taft

Ex-President of the United States

A REVIEW of the dreadful horror of this war brings back to one the attitude of mind of many good people in the outset of the war, who wrote communications and expressed themselves orally to the effect that this had shaken their faith in the existence of a God; that it could not be that a good God would permit the horror and agony of spirit of his children such as we saw before our eyes.

The war goes on. There has, it seems to me, developed in the war some evidence of the divine plan of eliminating from the family of nations a conspiracy to put the world under the heel of a ruthless philosophy of military force to take away the liberty of mankind.

If you will study the history of Germany for the last half century, you will see that conspiracy disclosing itself more and more clearly.

The doctrine preached openly in the philosophy of that country was that there is no international morality; that there is no rule by which a nation may be governed except that of self-preservation, as it is called, which means self-exploitation

WOUNDED GOING TO THE AMBULANCE

The work of the American Red Cross "everywhere in France" has served to seal the bond of fraternity between the two nations more closely than any other agency since the beginning of the war. From this time forth the red badge of courage and compassion will be worn by those who must minister to our own wounded as well as to our brother allies in arms.

over the ruins of other civilizations and other peoples and other nations.

THE MINDS OF A PEOPLE POISONED

So deftly has that conspiracy been carried on that the minds of a great people—a people that have demonstrated their greatness in many fields—even in that fifty years, have been poisoned into the conviction that it is their highest duty to subordinate every consideration of humanity to the exaltation and the development of military force, so that by that force they can take from the rest of the world what is needed to accomplish their destiny, at whatever cost of honor or principle.

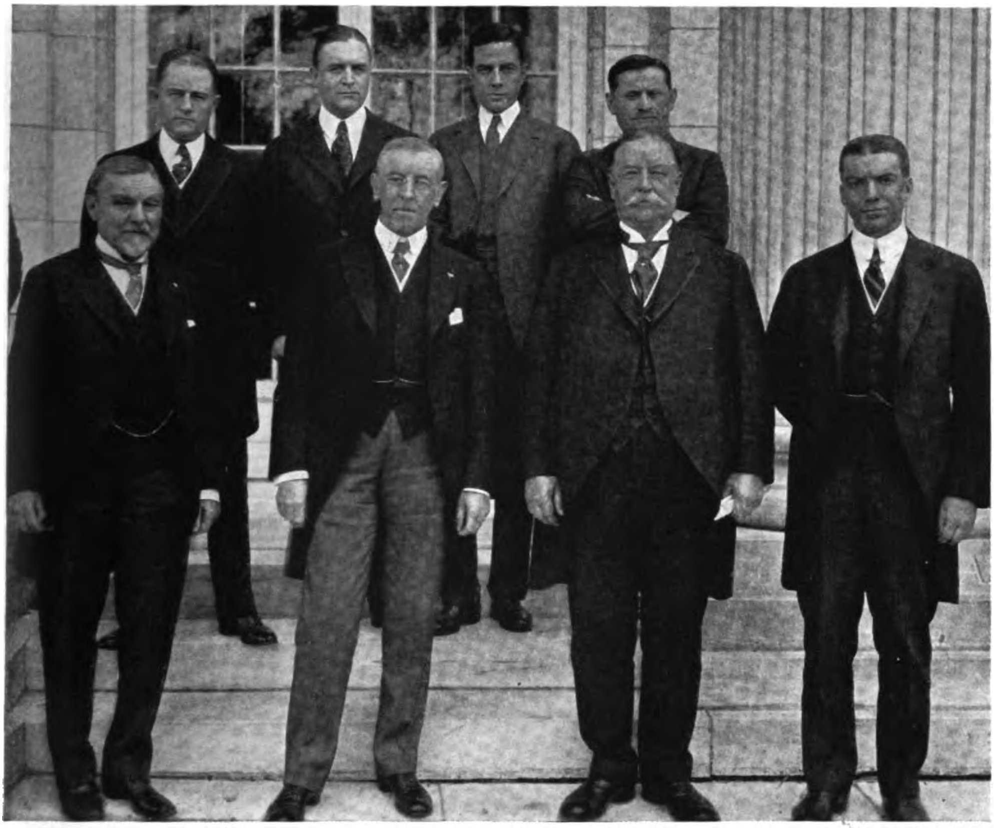
I yield to no man in my admiration for most of the qualities or all of the qualities of the German people *except* this obsession that they have been given through the instilling of that poison in the last fifty years.

Where do you see the working out of the divine plan? That was a cancer in the world. It had grown to be so formidable that it needed a capital operation to excise it and restore the world again to the station in the development of Christian civilization which, but for that, we would not have reached.

So we have seen it in the destruction of the greatest autocracy, perhaps—at least apparently the greatest autocracy—Russia, whose alliance with the Entente Allies gave for the time the lie or apparently gave the lie to the proposal that they were fighting the cause of freedom, fighting the cause of freedom against absolutism.

That toppled over, and now we have arrayed on the one side the democracies of the world against the military autocracies on the other, and the issue has been clearly drawn so that it may be seen by the wayfaring man, though a fool.

Accompanying this devotion to military efficiency, as a God, has come that blindness which is in the end to destroy the Hohenzollern philosophy of government.



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OFFICERS AND WAR COUNCIL OF THE AMERICAN RED CROSS

Left to right, front row, Robert W. De Forest, vice-president; Woodrow Wilson, President of the Red Cross; former President William H. Taft, chairman of the executive committee; Eliot Wadsworth, acting chairman. In the back row are Henry P. Davison, chairman of the War Council; Grayson P. Murphy, Charles D. Norton, and Edward N. Hurley, all members of the War Council. Cornelius N. Bliss, Jr., the only other member of the council, was not present.

After two and a half years of struggle that has tested the endurance nearly to the breaking point of the great nations engaged, Germany, in that confidence that she has in the science of warfare, has said: "We will starve England into submission and we will end the war," and in the accomplishment of that she forced, because she had to force, into the ranks of her enemies, at a time when this war is to be determined by money, by resources, and by men, the nation that can furnish more money, more resources, more equipment, and more men than any nation in the world!

And now, my friends, do not let us minimize the task we have before us. We Americans are a good people—we admit it; but one of our weaknesses is an assumption, justified by a good many things that have saved us from egregious mistakes in the past, that God looks after children, drunken men, and the United States!

We have got beyond that reliance—I do not know whether we have or not, but we are going to get beyond that reliance. Germany is not exhausted. She is, by reason of this system of fifty years standing, the greatest military nation that ever was organized, and she still has great fighting power; and she arrayed ourselves as her enemies because, with that devotion to system, with that failure to understand the influence of moral force in a people, she was contemptuous of what we, who had ignored military preparation, could do in this war.

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HANDS THAT ARE QUICK TO HEAL

Like this mother and daughter, many Americans, who are now serving in the ranks of Red Cross workers in France, had never known hardship or privation until they volunteered to assume the responsibilities of war service, in order that they might mitigate the suffering of the men who actually bear the brunt of battle.

She has now made an egregious error, as it is for us to show. When we went into this war there were a good many people that thought all we had to do was to draw a check or several checks for a billion dollars, and that "George" would do the fighting.

THE FRUIT OF GERMANY'S CONTEMPT

That is not the case. One of the things which has happened ought to give us the greatest hope and satisfaction. It is largely due to the gentleman who has just addressed us, the Secretary of War, and the President of this administration.

We have begun right in the raising of an army, and that is one thing gained. We have provided for a million or perhaps a million and a half of men. That probably will not be enough.

A great deal better that we should make overpreparation in a matter in which the whole welfare of the world is engaged than that we should make underpreparation!

What has been said I only wish to repeat, and that is, while we can intellectually, perhaps, visualize the war, if we sit down to think about it, we do not in our hearts feel it yet. It is something apart from us.

I read the other day, as doubtless you

Photograph by Brown Brothers

NO SURCEASE FROM LABORS OF LOVE

Even a Red Cross nurse has an occasional respite from toil; but so eager is the spirit of help that during moments of recreation the hands that are accustomed to binding wounds and ministering to the suffering are employed at knitting.

read, "Mr. Britling Sees It Through," and studied the psychological development of the coming of the war to him. That is what we have got to have.

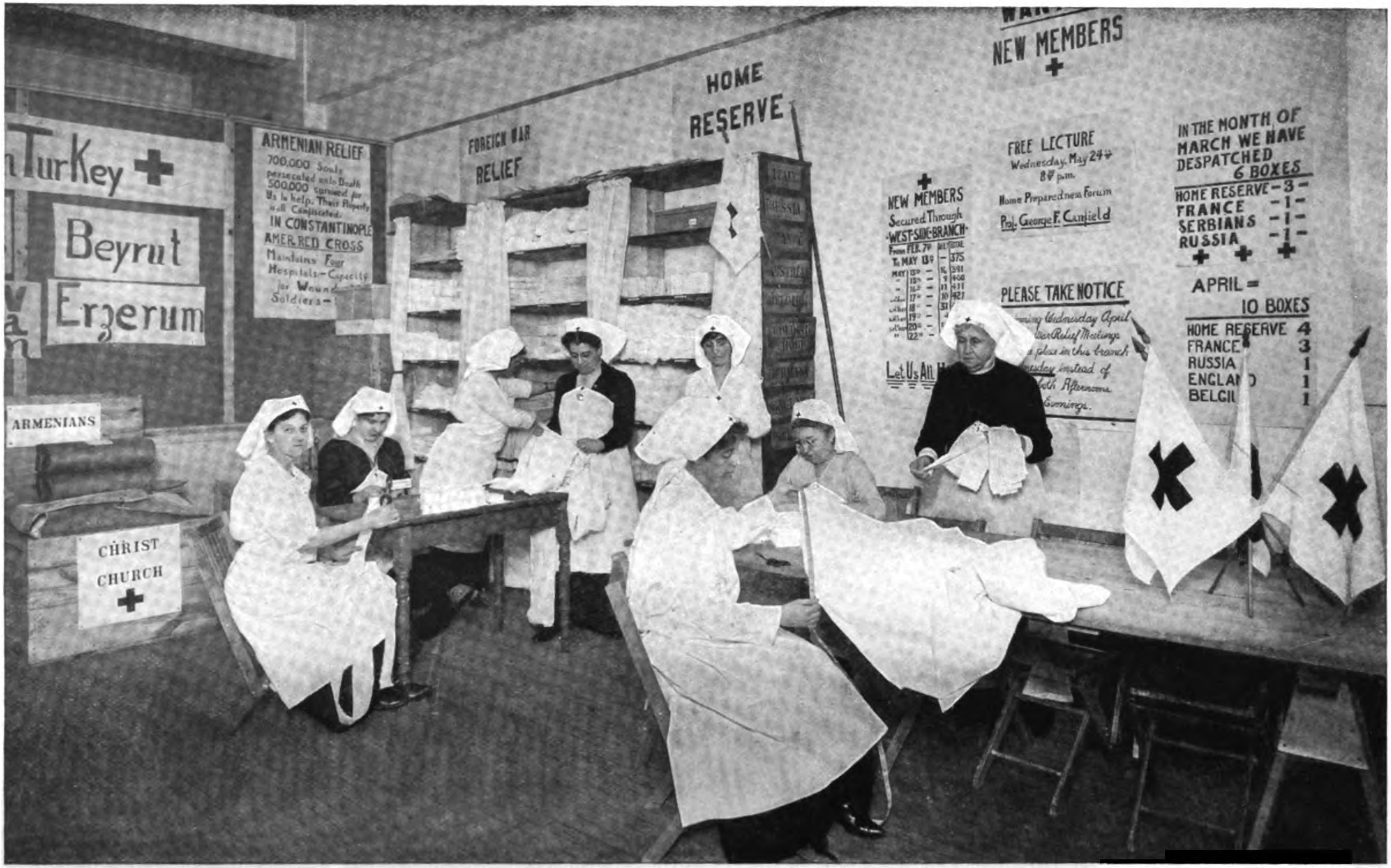
SOON WE'LL REALIZE WE'RE AT WAR

We shall not realize what the war is until our men, those beloved by us, have been exposed to the dreadful dangers, to the character of wounding that is so horrible under this modern system of warfare, and until we all go to the bulletins and study the names to see whether those who are near and dear to us have been taken for their country's sake.

Then the war will come in to us. Then there will be nothing but the war and everything else will be incidental; and until that psychological change has come, we shall not feel the whole measure of our duty as we must feel in order to carry this war through.

The Red Cross is the only recognized agency through which we may help to take care of the wounded of the armies and the nations that are fighting our battles.

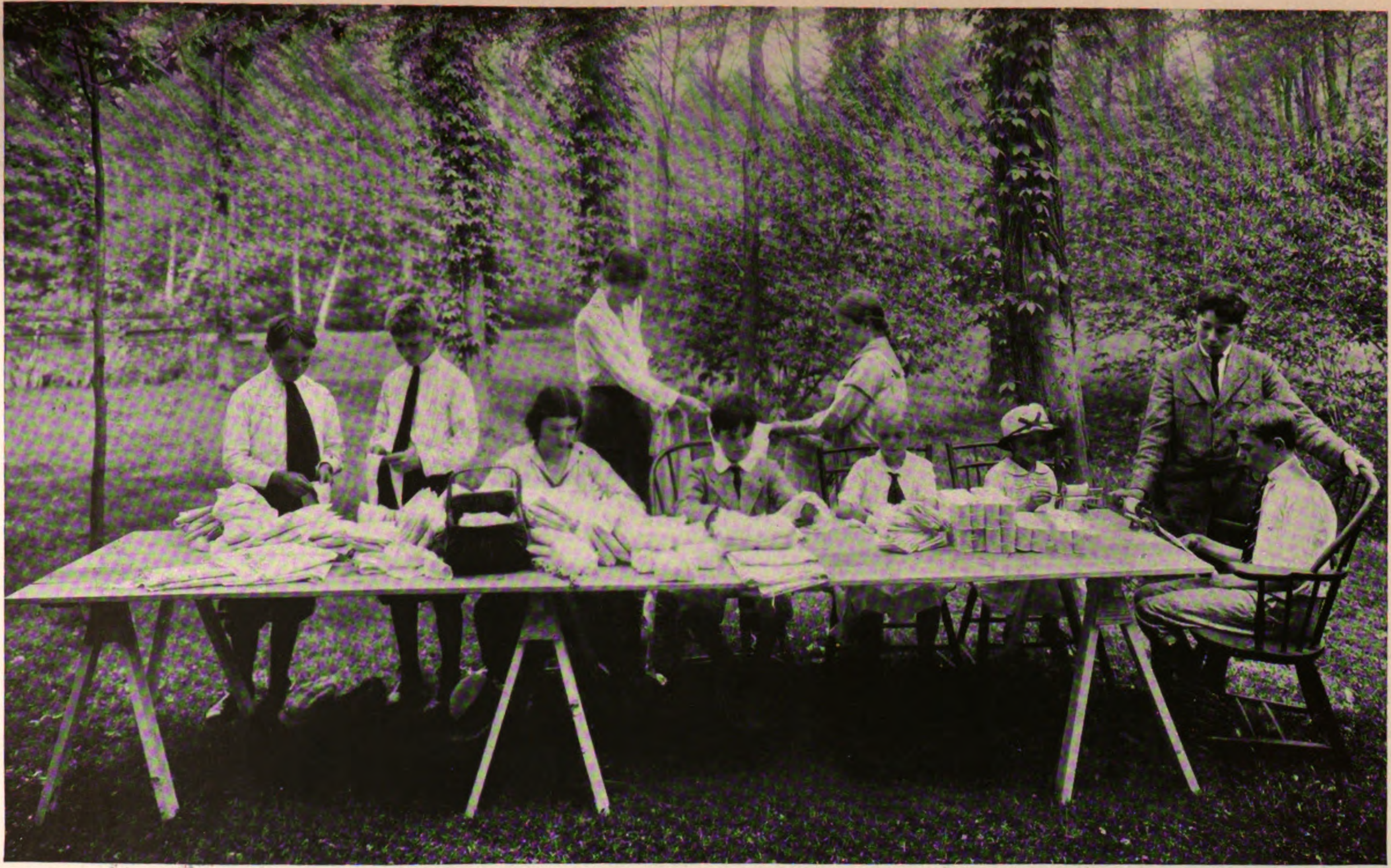
It is an admirable arrangement that some such avenue as that should be supplied to give vent to the patriotic desire


Turkey +
Beyrut
Erzerum
ARMENIANS
CHRIST CHURCH +
ARMENIAN RELIEF
700,000 Souls persecuted unto Death
500,000 survived for Us to help. Their Property all Confiscated.
IN CONSTANTINOPLE
AMER. RED CROSS
Maintains Four Hospitals—Capacity for Wounded Soldiers—
FOREIGN WAR RELIEF
HOME RESERVE
NEW MEMBERS +
NEW MEMBERS Secured Through WEST-SIDE-BRANCH
Let Us All
FREE LECTURE
Wednesday, May 24th
8th p.m.
Home Preparedness Forum
Prof. George F. Canfield
PLEASE TAKE NOTICE
IN THE MONTH OF MARCH WE HAVE DESPATCHED 6 BOXES
HOME RESERVE — 3 —
FRANCE — 1 —
SERBIANS — 1 —
RUSSIA — 1 —
APRIL = 10 BOXES
HOME RESERVE 4
FRANCE 3
RUSSIA 1
ENGLAND 1
BELGIUM 1

Photograph by Brown Brothers

A RED CROSS CHAPTER IN NEW YORK CITY

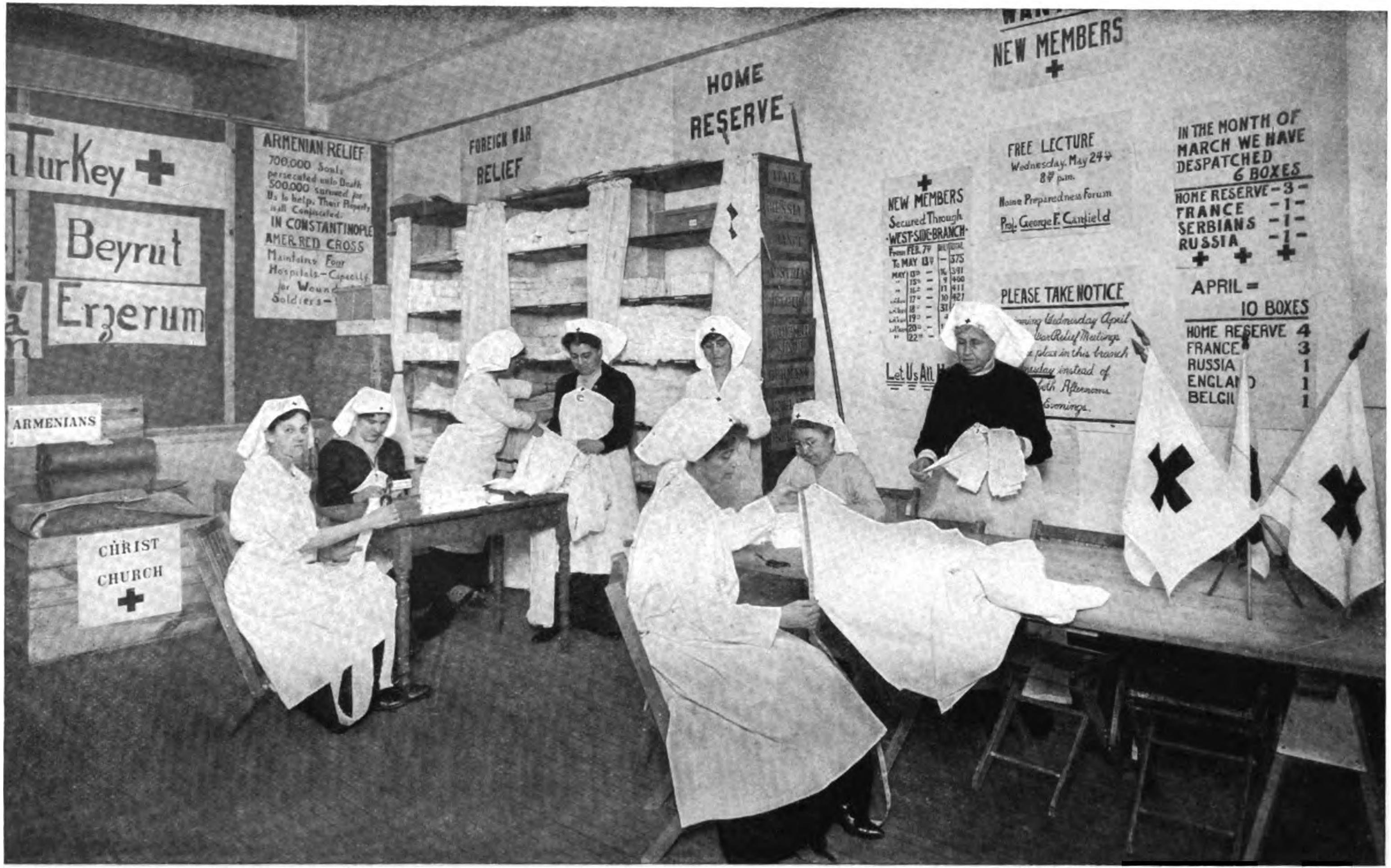
Not only in the large cities, but in every hamlet of America women are organizing, under competent instruction, to make bandages and gather supplies for early shipment to all the battle fronts of the world



Photograph from Brown Brothers

HOURS OF PLAY NOW CONSECRATED TO HUMAN SERVICE

In woodland camps, in parks, and in places once known as "pleasure resorts" eager hands, inspired by earnest hearts, are busy making bandages and preparing other Red Cross supplies which will be needed by our soldiers and their allies during the coming months of sacrifice.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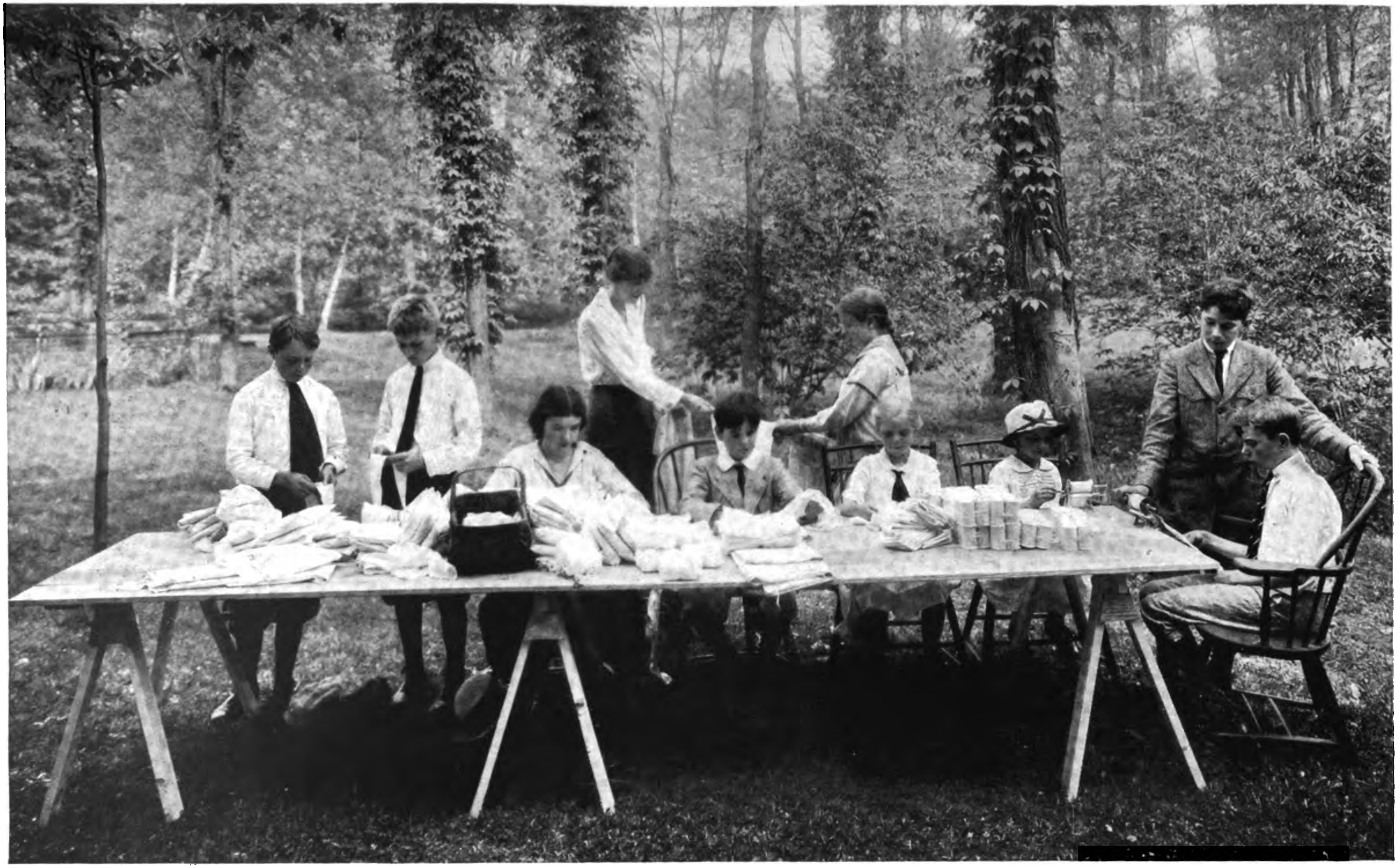

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A GROUP OF WORKERS AT THE NEW YORK HEADQUARTERS OF THE AMERICAN RED CROSS of those who cannot go to the front, to help in behalf of their country and the world. Every country has a Red Cross, and every country must have it, because no army can furnish the instrumentalities adequate to meet the proportion of wounded that this war furnishes.

SIX MILLION BEDS OF PAIN

Think of it! Forty million at the colors, seven million dead, six million on beds of pain, and the whole of Europe taken up with hostilities!

You cannot exaggerate the function that our Red Cross will have to perform merely in attending to the wounded of our army and other armies in carrying on this fight. Therefore, one hundred million dollars, great as the sum seems, is inadequate; but the first hundred million dollars will be the hardest hundred million to raise!

And we must leave no doubt about it. I thank God that the organization is in such competent hands to do the great work that has to be done.

And now, my friends, the one thing for which we ought to be grateful is that in this great war, in this war in which we shall have to make sacrifices—oh, such sacrifices, so great that they wring tears from us as we think of them—we should be grateful that we have a cause worthy of all the sacrifices that we can make!

THE RED CROSS SPIRIT

By Eliot Wadsworth

IT IS a most satisfactory fact that the Red Cross was able to call into the field and send to Europe the first actual help that we have extended to our allies, in the form of those six base hospital units which were called and sailed. Inside of three weeks the whole six units were on the water going to Europe, where they will take over existing hospitals and relieve the overworked staffs who have been struggling with their problem of caring for the wounded for nearly the last three years.

SACRIFICES THAT COUNT

The sacrifice these people make who go, particularly the doctors, is one that we cannot forget. When a busy doctor answers the call, such as Dr. Brewer in New York, it is something we should never forget. Dr. Brewer received his telegram that he was to go.

He was here the next morning to make the arrangements, and I met him, talked with him a minute, and he said: "My house is to rent. I have performed my last operation in this country. I am going to use every bit of my time from now on to enlist the balance of the personnel, getting my uniforms, and getting the men ready and everything in good order so that we can go."

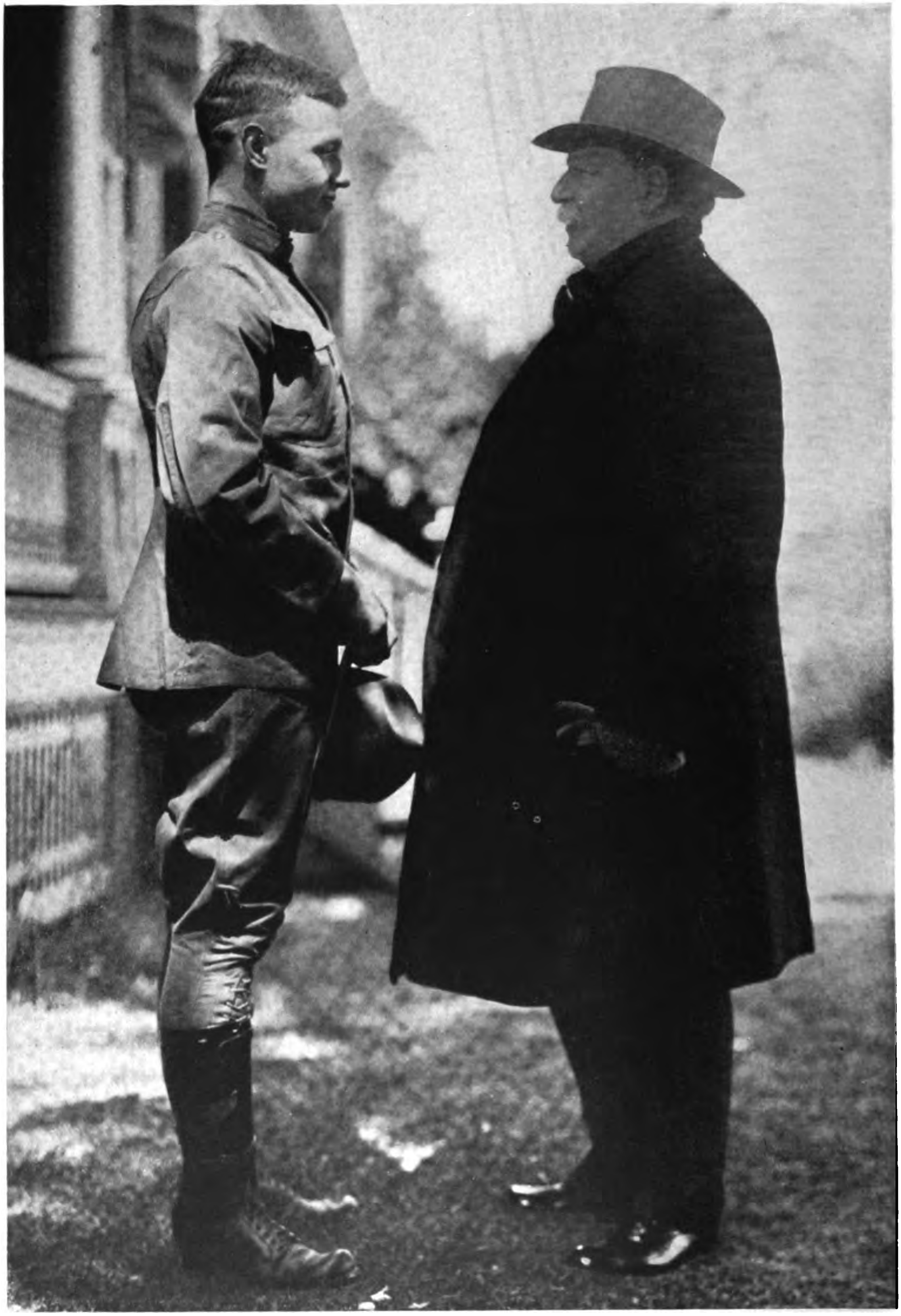
Such a sacrifice by a busy doctor, with a tremendous practice, cannot be measured in money. Any business man could afford to give a check for a year's income and be allowed to stay at home and go on with his business far better than any one of those doctors can afford to go over there and practically disappear from view for how long he does not know; it may be six months, it may be a year, it may be five years.

Not a single one of them begged off. They all went, unless there was some very pressing family reason, such as a serious illness, and in all cases they expressed a desire to go just as soon as they could possibly get away.

A HUNDRED PER CENT OF GIVERS

It is a tremendous power for good that is now spread in every hamlet, in every cross-roads in the country. It is in guiding that power and giving it something to do, in pointing out ways in which it can help more and more as the war goes on, that the headquarters has been occupied.

The Red Cross of this country has a problem that no Red Cross has ever had



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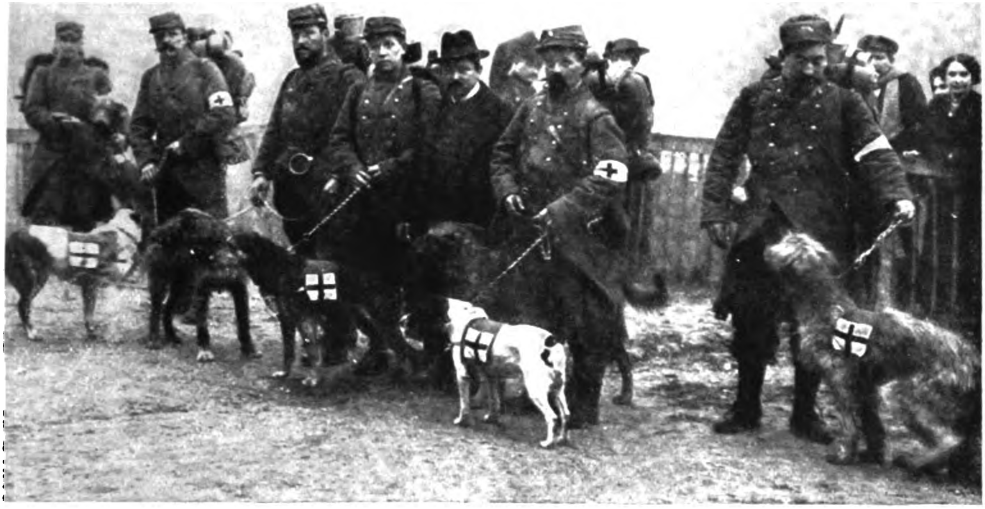
"UNITED WE STAND, DIVIDED WE FALL"

An illustration of the true American democracy which in times of stress swings every man into line for our country and the cause of liberty! The former Commander-in-Chief of the United States Army and Navy measuring up with his son, who decided to try to come up through the ranks and enlisted as a private in the field artillery.



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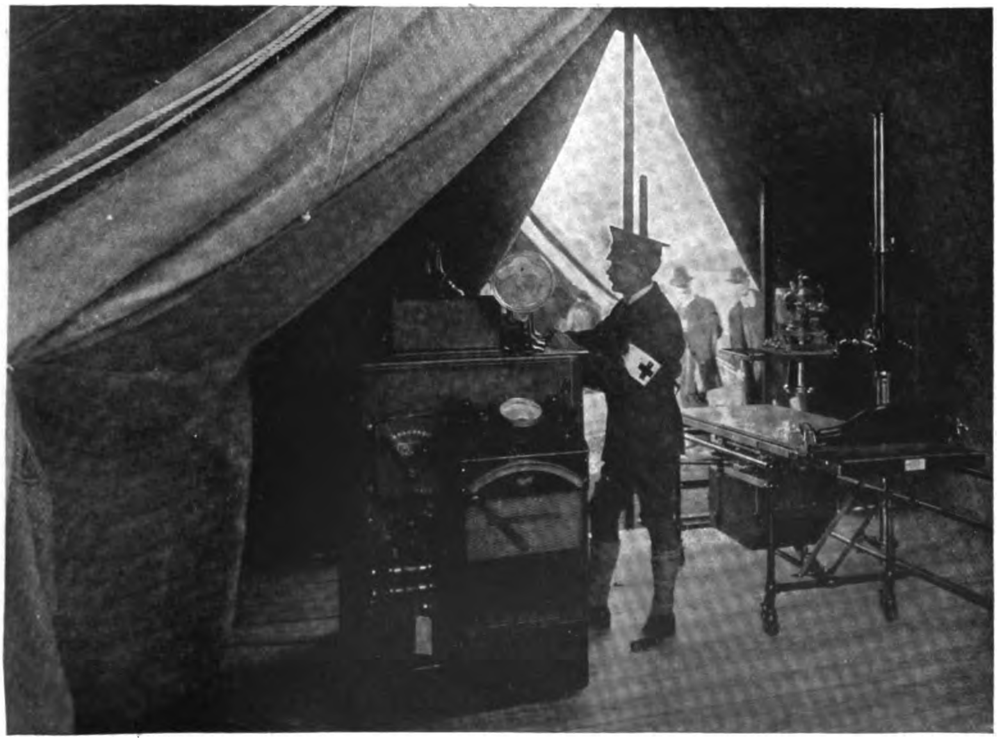
A SQUADRON OF FRENCH RED CROSS DOGS LEAVING PARIS

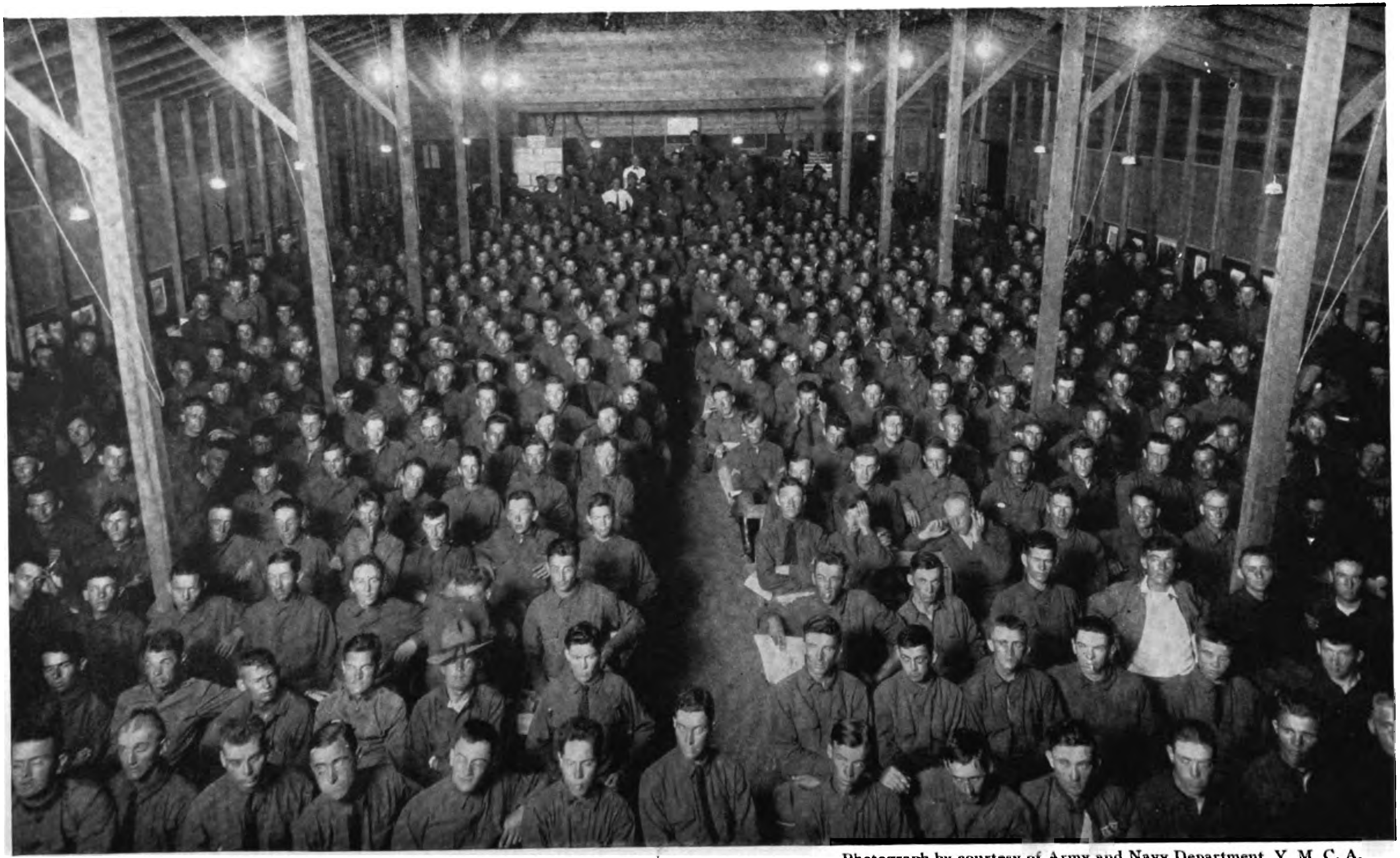
The Belgian police dogs, on account of their ability to detect and capture criminals, and the great St. Bernards, which were famous for their rescues of travelers lost in the Alpine snows, were considered the greatest heroes of the canine world until the present war introduced the Red Cross dogs, whose deeds of valor in front of the front-line trenches have saved the lives of thousands of sorely wounded.



Photograph from Brown Brothers

AN X-RAY TENT IN A BASE HOSPITAL OF THE RED CROSS

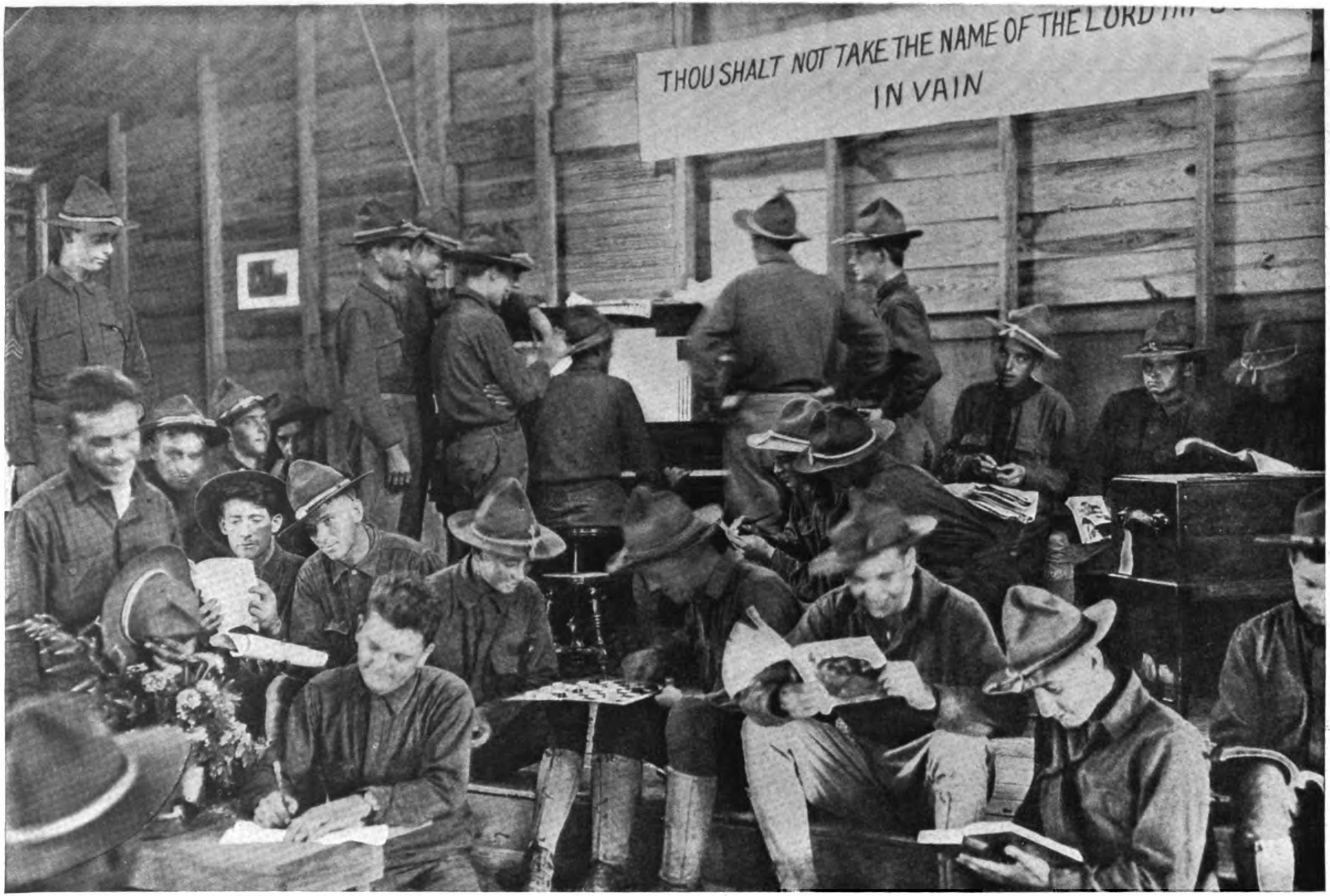
By means of these powerful rays the physician can see right through the human body, watch the beating of the heart, etc., and discover interior fractures or fragments of shell



Photograph by courtesy of Army and Navy Department, Y. M. C. A.

YOUNG MEN'S CHRISTIAN ASSOCIATION RELIGIOUS SERVICE IN AN ARMY CAMP

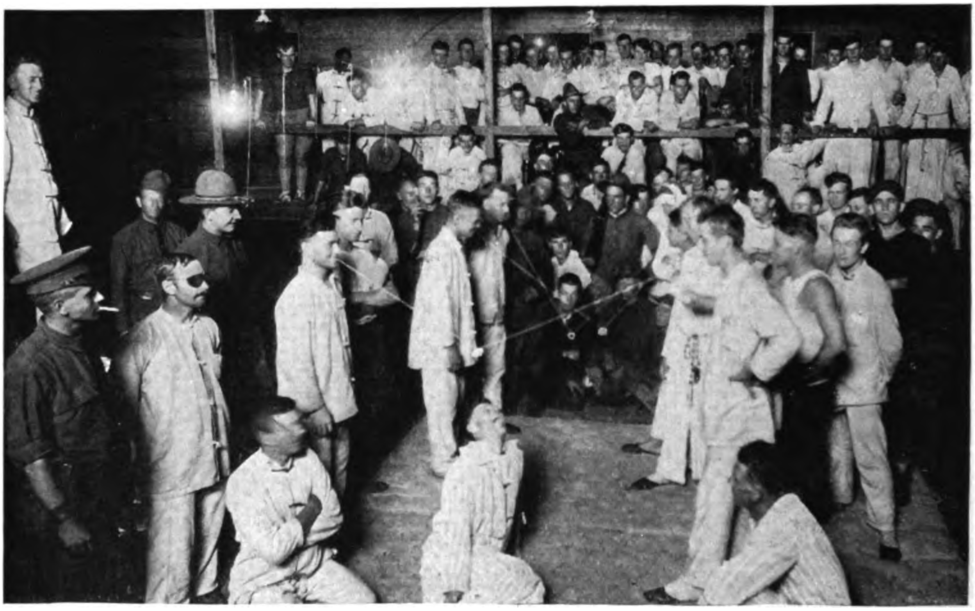
No army was ever sent into battle actuated by higher principles of righteousness, justice, and mercy than that which America is sending to Europe. In its work behind the lines the Y. M. C. A. will help to keep these principles fresh in the hearts of the men who are fighting for humanity, not for lust of power or pride of place.


THOU SHALT NOT TAKE THE NAME OF THE LORD THY G
IN VAIN

Photograph by courtesy of Army and Navy Department, Y. M. C. A.

A MILITARY CAMP, LIBRARY, MUSIC ROOM, AND TABERNACLE OF THE Y. M. C. A.

"Our American soldiers must have a home in France—somewhere to rest, somewhere to find a friendly atmosphere, somewhere to go for recreation and wholesome amusement"

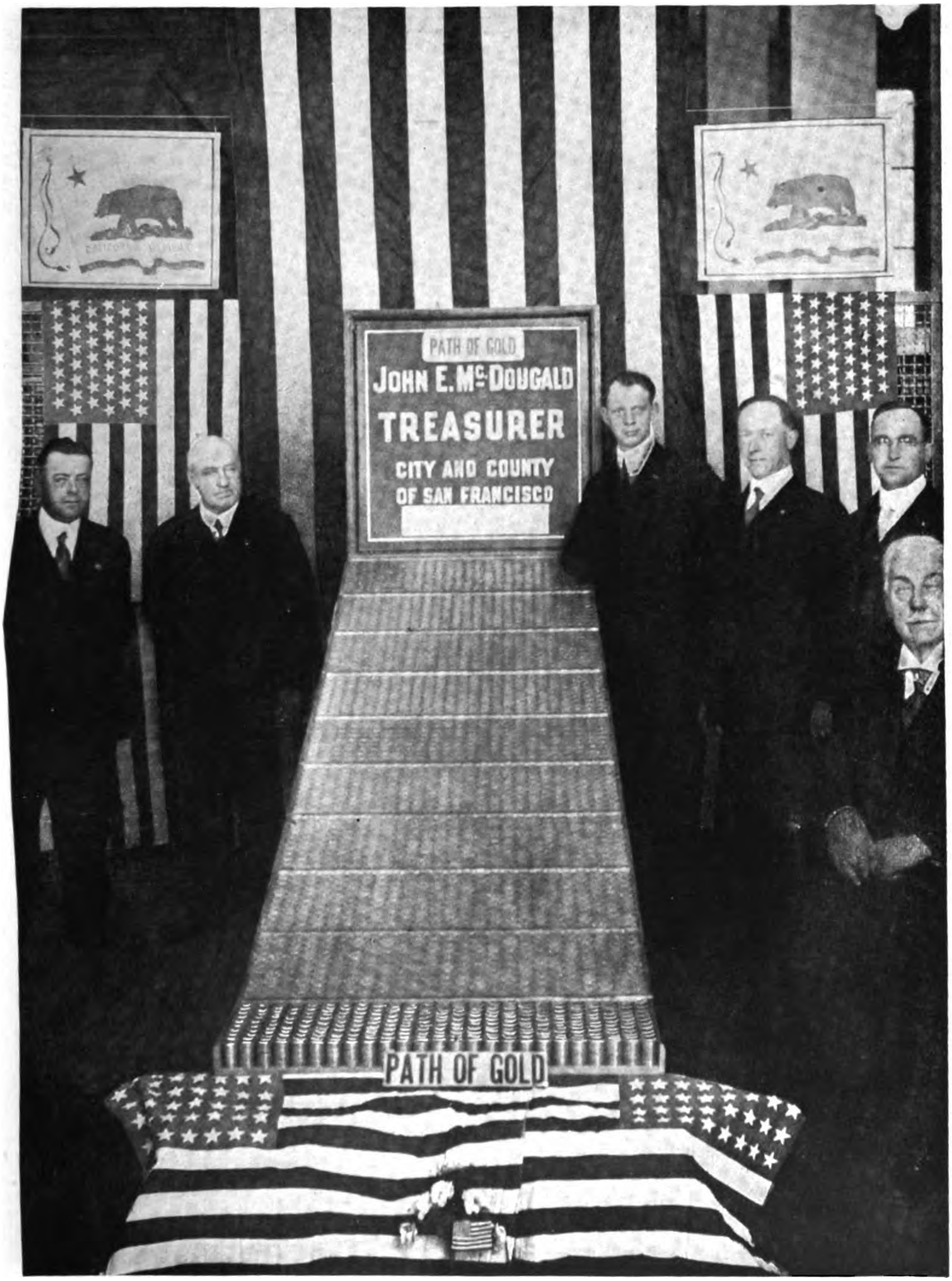


RECREATION HOUR IN A MILITARY CAMP, Y. M. C. A. BUILDING

One of the most important problems which has grown out of the modern method of trench warfare, with its months of "stale-mate" inactivity, is that of providing diversion for the soldiers. In this work the Army Young Men's Christian Association is maintaining thousands of recreation centers in army camps in the United States and Europe. The work of the Association is about as varied as the men. At the Mexican Border camps there were lectures and educational classes, concerts by such talent as Schumann-Heink, popular entertainments, and motion-picture shows which often attracted crowds so great that the Association buildings could not hold them. Volley-ball and base-ball also helped to offset the temptations of idle hours. The estimated number of letters written—free stationery furnished—reached nearly six millions.

Photograph by United States Navy Department

CLASS IN TELEGRAPHY, NAVAL TRAINING STATION


PATH OF GOLD
JOHN E. Mc DOUGALD
TREASURER
CITY AND COUNTY
OF SAN FRANCISCO
PATH OF GOLD

Photograph by C. E. Fennell

WHAT ONE MILLION DOLLARS IN GOLD LOOK LIKE

The fifty thousand twenty-dollar gold pieces in this display fill a tray 11 feet 3 inches long, 2 feet 10 inches wide, and 2 inches deep. One hundred times this amount of money is needed by the American Red Cross—a quantity of gold which would weigh 375,000 pounds and would make a column of yellow discs nearly eight miles high. And yet this vast sum, which is required for the alleviation of suffering and distress, is less than the amount the world is spending every forty-eight hours in the prosecution of this all-destroying war.

before—that of doing its own work in our own armed forces and at the same time trying to give the greatest possible help to the nations who are in desperate need of that help and who are really fighting our battle.

The Red Cross is strong now as it was never strong before for carrying on this work, and we can go before the country with absolute confidence that we can do the work that the country intrusts to us; that we can handle the money, the voluntary contributions that they may make, with the best possible efficiency and get the best possible results.

I know from personal observation what the problem is in Europe. It is beyond the power of any group of men or any nation to really meet those needs. But I have at least a vision of seeing throughout this country every individual affiliated in some way with the Red Cross through a Red Cross chapter or auxiliary branch.

Every individual that wants to help—and every individual does want to help—can be given a definite and practical burden to carry, and thus help to make this American National Red Cross give to our allies and give to this cause one of the greatest contributions toward winning the war than any nation in the world has ever given as a voluntary offering!

THE RED CROSS SPIRIT SPEAKS

"I kneel behind the soldier's trench,
I walk 'mid shambles' smear and stench,
The dead I mourn;
I bear the stretcher and I bend
O'er Fritz and Pierre and Jack to mend
What shells have torn.

"I go wherever men may dare,
I go wherever woman's care
And love can live;
Wherever strength and skill can bring
Surcease to human suffering,
Or solace give.

"I am your pennies and your pounds;
I am your bodies on their rounds
Of pain afar;
I am *you,* doing what you would
If you were only where you could—
Your avatar.

"The cross which on my arm I wear,
The flag which o'er my breast I bear,
Is but the sign
Of what you'd sacrifice for him
Who suffers on the hellish rim
Of war's red line."

—John H. Finley.

VOL. XXXI, NO. 6 WASHINGTON JUNE, 1917

THE
NATIONAL
GEOGRAPHIC
MAGAZINE

REVIVING A LOST ART

IN NO other field of endeavor have German efficiency and German science been so eminently successful as in the conservation of that country's limited resources to such a remarkable degree that even after three years of isolation from world markets, on which formerly it depended so largely for sustenance, the nation is not yet faced with the alternatives of surrender or starvation.

The United States can profit by this economic success of its enemy.

One of the most important features of the food conservation movement in Germany since the outbreak of the war, and one which has been of material aid in maintaining the physical fitness of the German industrial worker and his family, has been the practice of drying fruits and vegetables.

In the great cities all over the empire the government, following the establishment of an effectual blockade of food supplies, put into operation the scheme of collecting from the markets all unsold vegetables and fruits at the end of each day. Those foods which would have spoiled if "held over" were taken to large municipal drying plants, where they were made fit for future use at a negligible cost. These drying plants thus became great national food reservoirs, saving immense quantities of food which otherwise would have gone to waste.

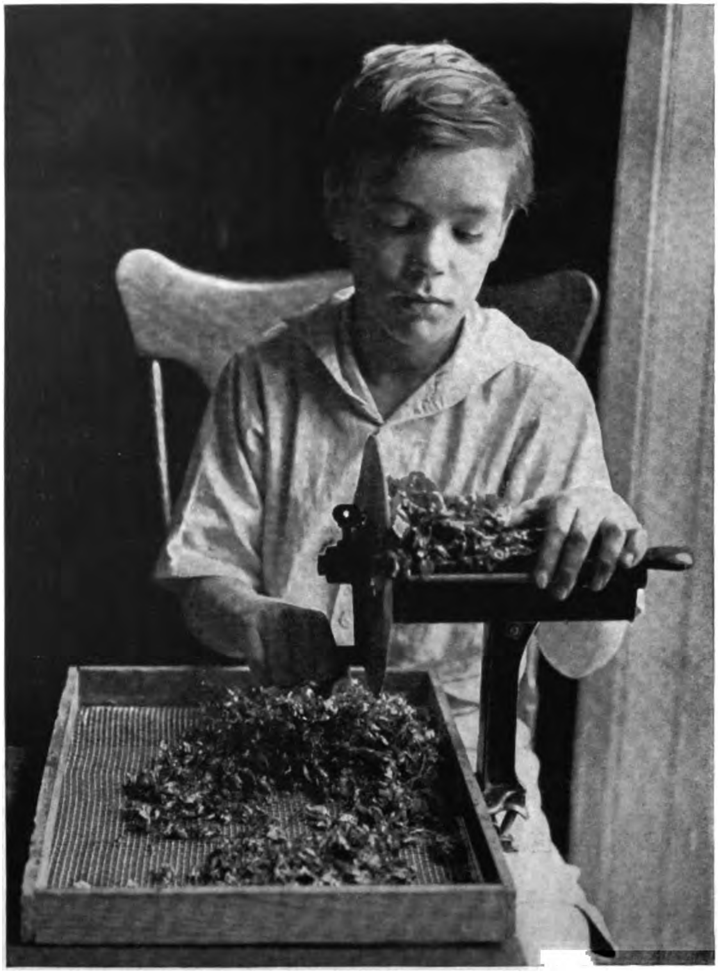
But the activities of the German Government did not end here. Community driers were established in the smaller towns and villages, and the inhabitants were instructed to see that all surplus vegetables were brought in and subjected to the drying process, which insured against the great extravagance of non-use.

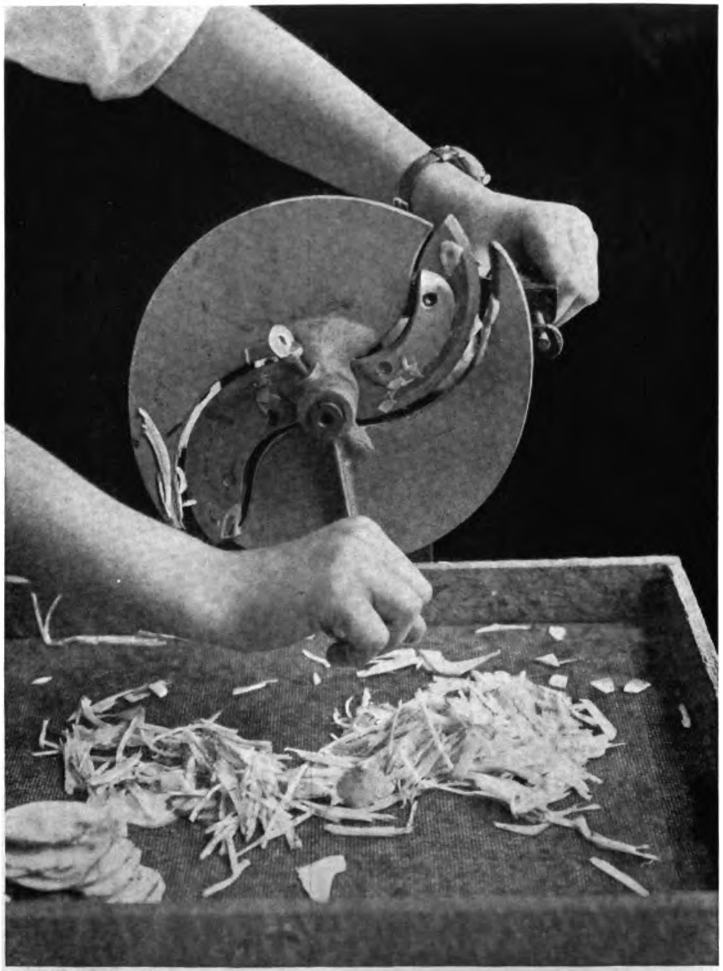
A third method of conservation by drying was inaugurated with the itinerant drying machines. These vegetable dry-kilns on wheels were sent through all the rural communities, and the farmer was admonished to allow no fruit to grow over-ripe in his orchard, no vegetable to spoil ungathered in his garden. It was an intensive campaign for the saving of little things, in so far as each individual household was concerned; but it has totaled large in the story of the nation's economic endurance.

Not only does the drying of fruits and vegetables increase the supply in the winter larder of the people at home, but much of the dried product can be included with the wheat, which must be sent in a constant stream across the seas to feed our own soldiers in France and our Allies on the battle fronts of the world.

The practicability of sending dried garden and orchard products to the fighting men has been demonstrated already in Canada, where fruits have been preserved in this manner and shipped to Europe.

While the process of saving surplus summer vegetables for winter consump-





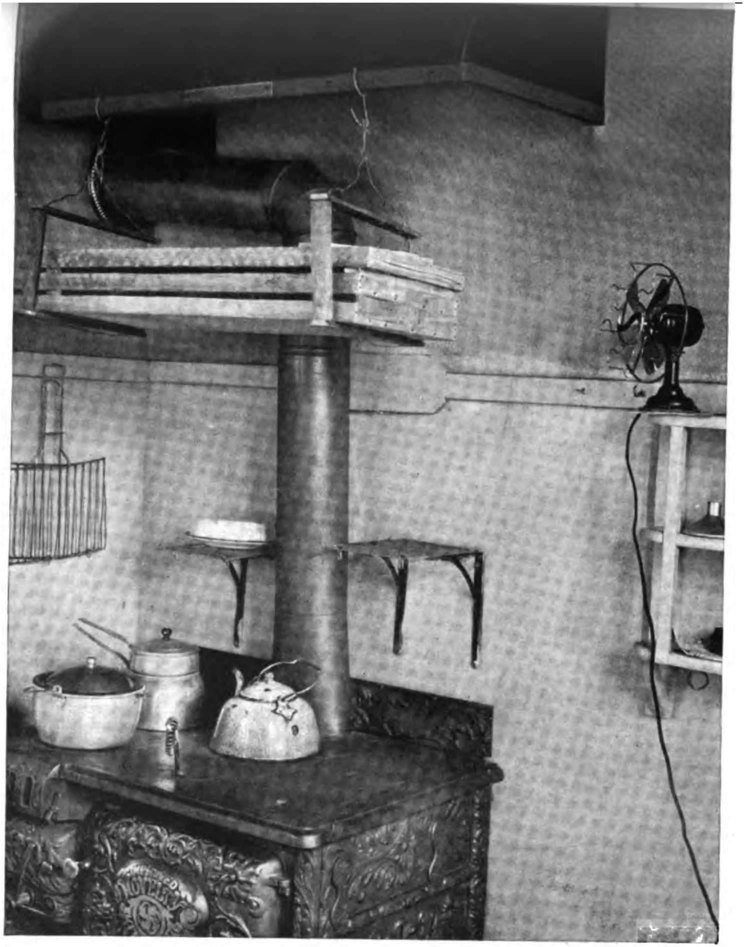
Photographs by Charles Martin and David Fairchild

A CHILD SLICING SWISS-CHARD LEAVES PREPARATORY TO DRYING THEM ON THE STOVE OR SUN DRIER

Great caution must be exercised in the use of any form of slicer, for it will cut fingers as mercilessly as it does vegetables

THE SLICING MACHINE AT WORK

Showing how it cuts potatoes into thin slices and, by putting these slices through again, cuts them into narrow strips, or "shoestrings"



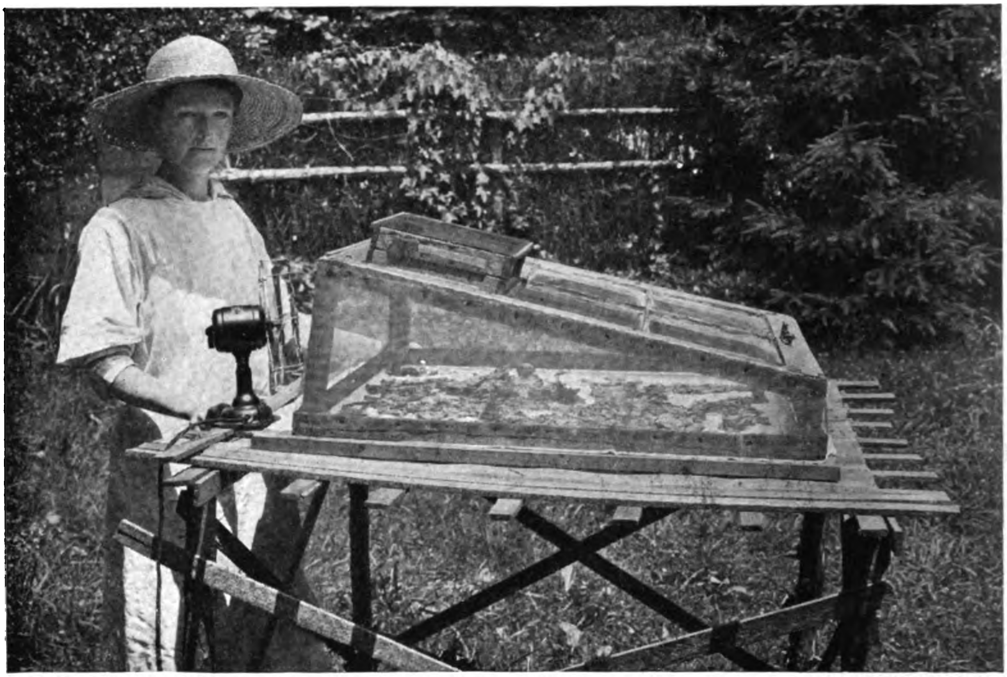
Photographs by Charles Martin

THREE LONG, NARROW TRAYS MADE OF FLY SCREEN AND LATHS AND HUNG UP IN A CHEAP SLING OF LATHS AND FENCE WIRE TO THE HOOD OF A KITCHEN STOVE

It is out of the way of the cook's head and utilizes waste heat, and the vegetables put this distance from the top of the stove do not get too hot.

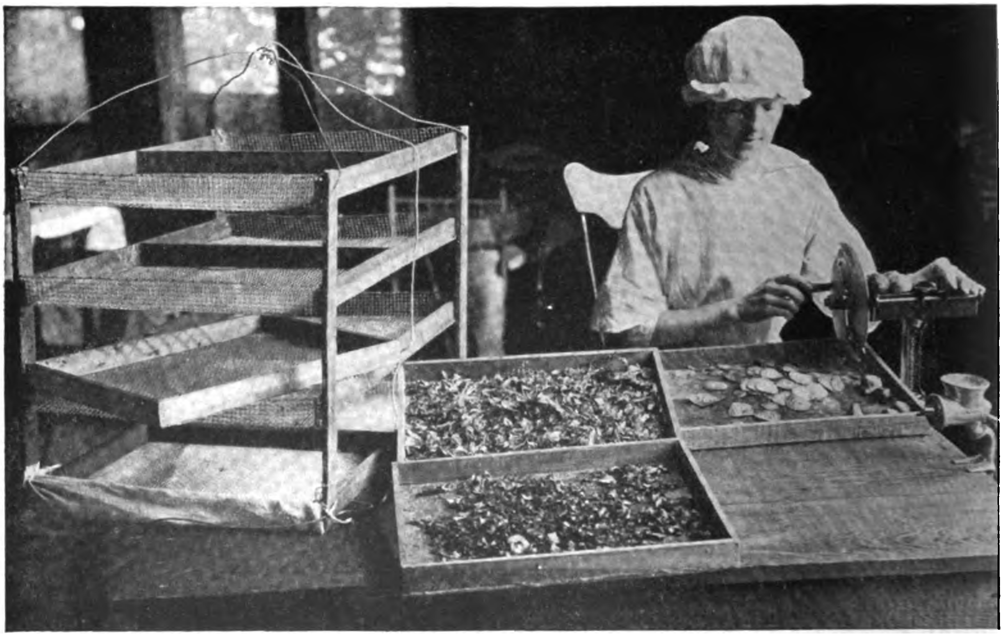
A TRAY OF DRIED SWISS CHARD TAKEN FROM THE HANGING STOVE DRIER

These, when soaked in water, swell and make excellent greens for soups and stews many months after drying



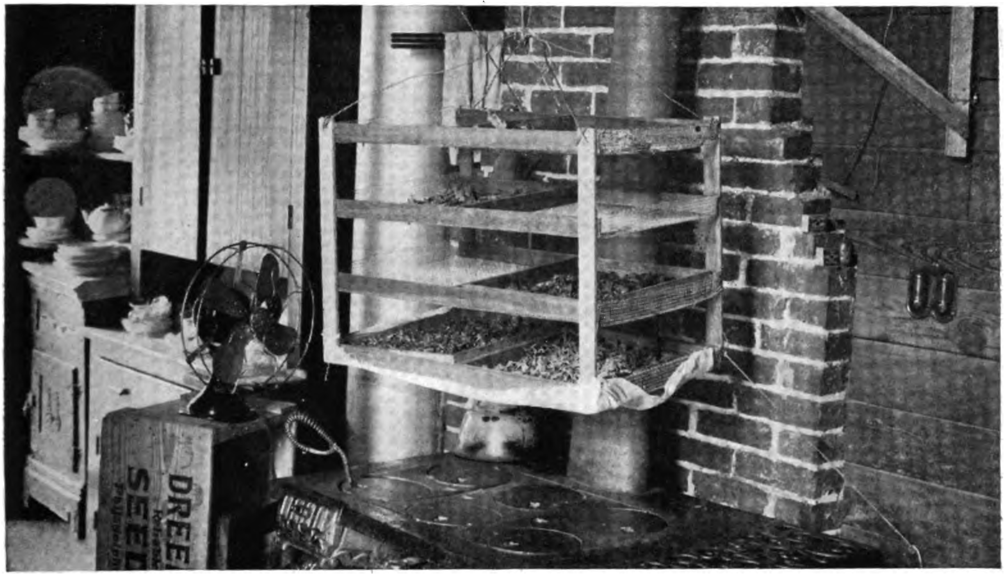
AN INEXPENSIVE SUN DRIER MADE OF ONE WINDOW SASH, A FEW LATHS, AND SOME METAL FLY SCREEN

By removing one pane of glass a simple ventilator can be made of lath and screen and fitted into place, or, if electricity is available, the drying can be accelerated by keeping a gentle current of air blowing over the fruits or vegetables. Protection from showers is obtained by such a drier and especially delicate fruits can be handled in small quantities under it; larger amounts require more space.



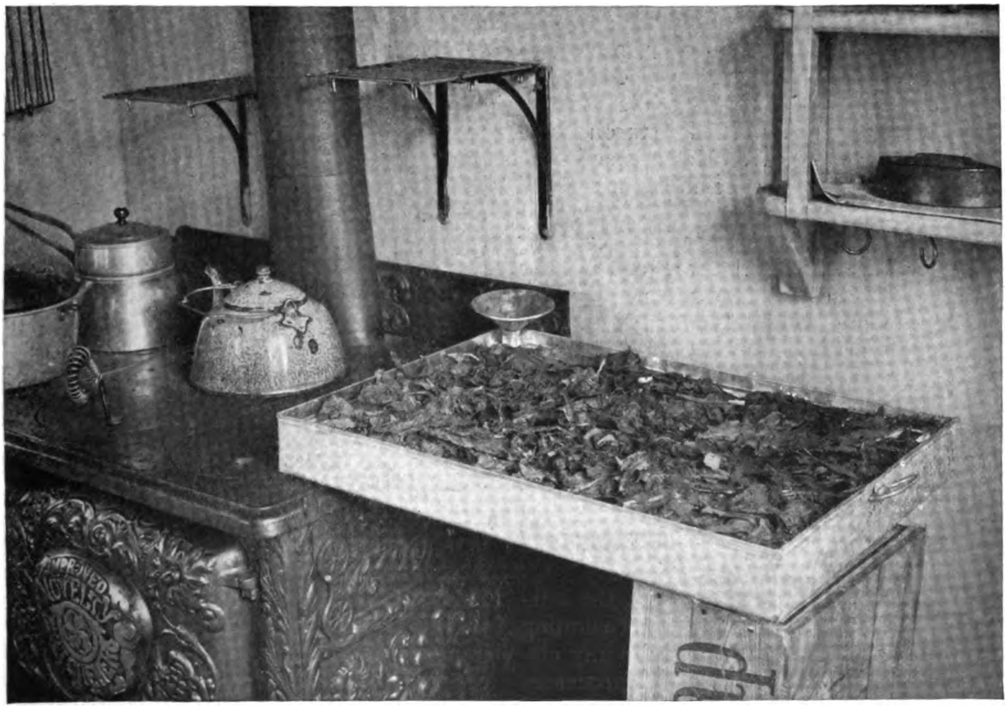
SLICING BEETS

The trays are filled with Swiss chard and sliced beets. Both trays and drier itself are made of lath and wire netting.



THE HANGING STOVE DRIER SWUNG OVER THE KITCHEN STOVE AFTER THE MEAL HAS BEEN PREPARED

It utilizes heat which otherwise would be wasted. When the stove is required for cooking purposes, the drier can be swung back out of the way by means of the wooden bracket made of lath and attached to the wall by a bent nail and piece of fence wire. An electric fan can be trained on the drier to hasten the drying process. It can be kept running at night when the kitchen stove is cold.



Photographs by Charles Martin and David Fairchild

THE WATER-TANK DRIER

This has a false bottom and under it water, which is kept hot by the contact of the drier with the back of the stove. In it are leaves of the Chinese cabbage, which are easily and quickly dried on this type of drier. Unless watched, delicate leaves will scorch.

tion by merely drying may seem novel to the housewife of today, it was not unknown to the thrifty mistress of the home two generations ago. Our grandmothers knew the secret of drying many garden and farm products, and so successful were they in putting aside for the winter day those vegetables which could not be consumed in season that they came to prefer dried sweet corn over the canned product, while the dried pumpkin and squash were pie-plants par excellence.

In certain communities today snap-beans are strung on threads and dried above the stove, while festoons of red and green peppers decorate the space between the kitchen rafters. Thrifty housewives dry cherries and raspberries on bits of bark for winter use in place of raisins. In fact, a survey of our fruit products shows that drying is by no means an unusual method of preservation. Prunes, figs, dates, raisins, apples, and apricots are staples in the food markets of the world.

Turning to the vegetables, we find that dried beans of many varieties, peas, and other legumes, tea, coffee, and cocoa are familiar articles of food, while various manufactured products, like starch, tapioca, and macaroni, are dried either in the sun or wind, or in specially constructed driers.

While the modern methods of canning on a vast commercial scale caused the drying processes of two generations ago to become one of the "lost arts" of the home, the present food situation seems destined to revive it with splendid economic results. The country is producing at the present time larger quantities of perishable foodstuffs than at any other period in its history, owing to the effective educational campaign which has stimulated the cultivation of individual gardens in waste places.

Drying will help to conserve the surplus yield of these gardens. But canning and preserving should not under any circumstances be abandoned. All processes have their place in the economy of food conservation.

One of the chief advantages of drying vegetables and fruits lies in the practicability of the process for the city housewife. The farmer's wife has her root cellars and other places for storing vegetables; but in the city home, where space is a primary consideration, the drying method furnishes a practical solution of an important problem.

For the farmer's wife the new methods of canning are commended in preference to the longer process of sun-drying. But new and shorter methods of drying are now available, and the dried product has several advantages over the canned product, particularly in the saving of the expense of cans, glass jars, and other containers. Dried vegetables can be stored in receptacles which cannot be used for canning, and the bulk of the product is usually less.

Another consideration should be taken into account: the canned fruits and vegetables are subject to freezing, a danger entirely obviated in the drying process. Dried foodstuffs can be shipped in the most compact form, with a minimum of weight and a minimum of risk.

One of the most important considerations commending the drying process is that the city or town housewife can employ this method of preservation with the simplest and most inexpensive facilities, and the process can be employed continuously, whether the food to be saved is in large or small quantities. A few sweet potatoes, peas, or beans can be dried at a time. Even a single turnip or an apple is worth drying. Bit by bit vegetables may be saved until a whole meal is conserved. Small lots of dried carrots, cabbage, turnips, potatoes, and onions are combined to advantage for vegetable soup.

As to the tastiness of such dried products as spinach, beet-tops, and kale there is no question. In other cases, while the flavor of the fresh vegetable is not preserved in its entirety, the use of these ingredients in soups and stews meets successfully the problem of any loss of palatability, while the food value of the dried product remains unimpaired.

Photograph by Charles Martin

ONCE DRIED, THE VEGETABLES CAN BE STORED IN PAPER BAGS OR CARTONS

One form of these cartons made of paraffin paper is closed by means of a special instrument, which is heated and spreads the cap into place, thus hermetically sealing the carton.

OUR STATE FLOWERS

The Floral Emblems Chosen by the Commonwealths

By the Editor

The National Geographic Magazine in this number prints as its annual tribute to the "children of summer" pictures of the blossoms which have been chosen as the floral favorites of the various States.

Realizing that an emblem of natural beauty is as significant and essential as a State seal, motto, or flag, twenty-six States, more than one-half of the nation's commonwealths, have formally, by legislative action and gubernatorial approval, selected State flowers.

Six other States have accepted the verdict of the school children as the voice of the people, while six others have adopted floral emblems by common consent, mainly under the leadership of the club women of the respective commonwealths. The ten remaining States and the District of Columbia have either taken no action at all or else action possessing so little weight of authority that the several Secretaries of State do not recognize it (see index, page 486).

Although thirty-eight of the States have in one way or another expressed their preferences and chosen their flower queens, this is the first attempt that has been made to assemble in a single publication color paintings and descriptions of all the State flowers.

These pictures, like those of previous flower series appearing in the Geographic, are very costly reproductions of the exquisitely beautiful paintings from life made especially for this Magazine by Mary E. Eaton, of the New York Botanical Garden.

In making their choices the legislatures, women's clubs, and school children of the several States were confronted in every instance by a plethora rather than a paucity of floral treasures from which to select a favorite, for the United States contains a much greater number of species of wild flowers than any equal area on the globe.

Nations have long honored particular flowers with heartiness and devotion—Ireland, the shamrock, that beautiful bit of green with which it is alleged St. Patrick demonstrated the doctrine of the Trinity; Scotland, the thistle, which pricked the foot of the Dane and awakened all Scotland with his cry of pain, saving her from the heel of the invader; and France, the lily, which Ruskin called the flower of chivalry (the iris, or blue flag).

Our series pictures every flower that has been chosen by legislative action or is regarded by common consent as the State flower. But in cases where different species of the same flower have been selected by several States, only one specimen is pictured (as the goldenrod, violet, rose, and rhododendron).

SOME OF THE DIFFICULTIES OF MAKING THIS COLLECTION

Some difficulty, however, has been experienced in the selection of the exact species to be portrayed. For instance, in the case of Minnesota, although the act of the legislature gives the name of the flower chosen as *Cypripedium calceolus*, the extract from the official year book of the State, furnished the National Geographic Society by the Secretary of State, gives six different species as representative of the State flower, among which is *Cypripedium acaule,* but among which *Cypripedium calceolus* does not appear.

Again, in the case of Nebraska, the act of the legislature choosing the goldenrod as the official flower designates *Solidago serotina* as the particular species. On the other hand, this species is not the most widely distributed in other States which have a preference for the goldenrod. It is believed that *Solidago nemoralis* (page 511) is one of the most representative goldenrods, and one which would be probably the composite of preferences of all of the States having that flower, either officially or unofficially.

Colorado's legislature expressly names the "white and lavender columbine," with no Latin name attached, as the State flower; yet today, through a later vote of the school children, the blue and white columbine is everywhere in Colorado recognized as the State flower.

The acts of the Arkansas and Michigan legislatures simply call for "the apple blossom." The Illinois law refers to its preference only as "the native violet," of which there are numerous species, while the Louisiana law names no species, but simply says "magnolia." The Delaware law gives no scientific designation, but speaks only of "the peach blossom."

The resolution of the Ohio legislature names the "scarlet carnation," while in the Indiana law the only designation is "the carnation." Remembering how many colors of carnation there are in existence today, the one chosen was left, in the case of Indiana, to the discretion of the artist.

The reader should note that the carnation pictured on page 507 is really too deep a red for the State flower of Ohio, which has a brighter tone.

When the State of Kansas came to adopt the sunflower, the resolution of the legislature used the term "*helianthus,* or wild native sunflower."

The resolution of the legislature of Texas sets forth that the State flower is "*Lupinus subcarnosus,* commonly known as the buffalo clover, or bluebonnet." There appears to be so little difference between *Lupinus subcarnosus* and *Lupinus texensis* that no distinction whatever is made between them by the average Texan in plucking the State flower.

In the case of the South Dakota flower, while the artist portrays the species of pasque flower known as *Pulsatilla patens,* the South Dakota law designates the *Anemone patens.* The main difference between the two seems to be the matter of a name, since the pasque flower is the name of several plants of the genus *anemone,* section *pulsatilla.*

OKLAHOMA AND MINNESOTA ACTED OFFICIALLY FIRST

Oklahoma was the first of our States to take legislative action in the adoption of a State flower. In January, 1893, the Territorial government was considering the question of exhibits for the Chicago World's Fair and a Territorial seal. The ladies of Oklahoma had presented a petition asking that the mistletoe be made the Territory's emblematic flower. A bill to that end was accordingly introduced and passed by a large majority.

Minnesota had a bill pending to make the moccasin flower the State's official blossom at the same time that Oklahoma was debating the issue of the mistletoe. In February, 1893, the Gopher State was preparing its exhibits for the Chicago Fair. The Ladies' Auxiliary of the State World's Fair Commission found only an official flower lacking—which they thought ought to be used in the scheme of decorations. So they prepared a bill making the moccasin flower the emblematic representative of the Commonwealth and presented a widely signed petition in favor of its enactment. The legislature promptly passed the bill.

The next State to take action was Vermont. A concurrent resolution to adopt a flower was introduced in the House of the Vermont legislature, October 19, 1894. It was considered by a special committee consisting of one member from each county—fourteen in all. The name of the flower was not specified until November 8. On that date an agreement was reached which led to the amendment of the bill by the insertion of "red clover."

The next State to act was Nebraska. On the 29th of January, 1895, the delegate from Boone County introduced a bill to designate a floral emblem for the State. It provided that the goldenrod should be the emblematic flower. On the 23d of March the bill was taken up in committee of the whole. One of the delegates, having in mind that Nebraska was a free silver State, moved to substitute the word "silver" for "golden." His motion was not considered, and the bill was promptly passed by the House and Senate.

Delaware was the fifth State in the Union legislatively to adopt a State flower, when by an act of the legislature, approved May 5, 1895, that State chose the peach blossom as its representative. There was very little debate and the sentiment in its favor was practically unanimous.

Montana also chose a State flower in 1895, its legislature adopting the bitter root almost unanimously.

Michigan followed the example of Delaware in awarding its floral honors to the blossom of its favorite fruit. In the preamble of its resolution, approved April 28, 1897, adopting the apple blossom, the legislature declared that a refined sentiment seemed to call for the adoption of a State flower; that the blossoming apple trees add much to the beauty of Michigan landscapes; that Michigan apples have gained a world-wide reputation, and that at least one of the most fragrant and beautiful flowered species of apple, the *Pyrus coronaria,* is native to the State.

The year 1899 witnessed the accession of two States to the ranks of those enjoying legislatively created floral emblems. On January 30, 1899, a petition was introduced in the Oregon Senate reciting the fact that the women's clubs of Portland, in regular session assembled, had declared in favor of the Oregon grape as a State flower, and asking the legislature to enact their recommendation into law. What little debate there was indicated a practical unanimity of sentiment, and the measure was ready for the Governor's signature on February 2 of that year.

IN COLORADO THE SCHOOL CHILDREN OVERRULE THE LEGISLATORS

Colorado holds a unique position in the matter of flower legislation. The lawmakers of the Centennial State passed an act, approved April 4, 1899, designating the white and lavender columbine as the State flower of Colorado. This, however, did not please the school children. Accordingly, on Arbor Day of 1911 they submitted the question to a referendum in which they were the only qualified voters. Out of 22,316 votes cast, 14,472 were in favor of the blue and white columbine (*Aquilegia cærulea*). No other flower received over 1,200 votes. The governor and the legislature seem to have concluded that the children are the court of last resort in such a matter and have apparently acquiesced in their decision.

Louisiana was the next State to act. June 20, 1900, a bill making the magnolia the State flower was read in the House. July 6 it passed that body by a vote of 62 to 2. Six days later it passed the Senate by the unanimous vote of 32 to 0.

Arkansas, by legislative action, January, 1901, chose the apple blossom.

The very next month Texas took up the question. On February 28, 1901, a Senate concurrent resolution was introduced, the preamble of which recited the fact that the National Society of Colonial Dames of America, Texas branch, had requested of the legislature that it adopt "*Lupinus subcarnosus*, generally known as the buffalo clover, or bluebonnet," as the State flower. Sentiment in favor of the bluebonnet was so general that there was little debate, and the measure was passed and finally approved by the Governor on March 7.

IN WEST VIRGINIA ALSO THE CHILDREN LEAD THE WAY

In West Virginia the subject of an official State flower had long been a theme of discussion among teachers and others interested in school work. It did not take form, however, until 1901, when the Governor in his message to the legislature recommended the adoption of a State flower and suggested the rhododendron, or big laurel, as the most appropriate.

Under the direction of the State Superintendent of Free Schools, the school children of the State, on the 25th of November, 1902, voted upon the question of a selection. Out of 33,854 votes cast, 19,131 were for the laurel, 3,663 for the honeysuckle, 3,387 for the wild rose, and 3,162 for the goldenrod. On the 8th day of January, 1903, the legislature adopted a joint resolution designating the rhododendron, or big laurel, as the official State flower.

California had long been advocating the enactment of a law making the golden poppy the Golden Gate State's official flower. More than fifteen years ago a bill was introduced in the Senate and had passed both houses, recognizing the yellow-hued beauty; but the Governor vetoed the measure. The House then passed it over his veto, but the Senate permitted it to die. The bill was reintroduced in the next legislature, January 21, 1903. It passed the Senate on February 2 by a vote of 28 to 1. It received practically a unanimous vote also in the House. On March 2 the new Governor advised the legislature that he had approved the bill, and the golden poppy became the State flower of California.

The bill to make the sunflower the floral emblem of Kansas was introduced on February 10, 1903. The Senate passed it by a vote of 30 to 0, and the House by 31 to 0.

South Dakota's resolution selecting the pasque flower as her floral emblem was enacted March 4, 1903, and provided that on and after the passage of the act the State floral emblem of South Dakota should be the pasque flower (*Anemone patens*), with the accompanying motto: "I lead."

OHIO CHOOSES MCKINLEY'S FAVORITE FLOWER

The State of Ohio officially adopted the scarlet carnation as its emblematic flower on the 29th day of January, 1904. Both houses unanimously voted for the measure. The law is as follows: "The scarlet carnation is hereby adopted as the State flower of Ohio, as a token of love and reverence for the memory of William McKinley."

Connecticut chose the mountain laurel as its State flower after a report of the Committee on Agriculture in the Senate favoring such action. One senator opposed the bill, saying that he regarded it as unnecessary legislation, but that if the clover had been recommended he would have been inclined to favor it as the nearest approach in this country to the shamrock he loved. He doubted, however, if there was any necessity for the legislation. Another senator declared that he was bound to favor anything three thousand women could agree on. In the House the choice was advocatel in enthusiastic terms. Upon each desk sprigs of mountain laurel were distributed by persons in favor of the bill. After a short discussion it passed. When the measure was pending in the Senate the botanical name of the laurel was inserted by a senator, who complained that the request was out of order when some one asked him to spell it.

North Dakota adopted the wild prairie rose by legislative action in 1907, the same year that Florida's legislature selected the orange blossom. By act of the General Assembly the violet has been the State flower of Illinois since the 1st of July, 1908.

Utah officially recognized the sego lily as its choice by act of its legislature in 1911. Indiana selected the carnation by legislative act in 1903, but did not specify the color of the carnation, which in our illustration was left to the artist.

THE STATE FLOWER MOVEMENT WAS STARTED BY NEW YORK

The State flower movement in the United States was started by New York, although its legislature has never yet officially sanctioned a flower. In 1890 a school vote was taken in the entire State, with the result that the goldenrod was adopted by a vote of 81,308 as against 79,666 for other candidates. A year later the case was reopened, and this time the rose led, receiving 294,816 votes as against 206,402 for all the other entries. From that time the rose has been considered New York's official flower, though the vote did not specify any particular rose.

Rhode Island also chose its official emblem by the vote of the school children. In May, 1897, there was a plebiscite of the children, with the result that the violet was overwhelmingly favored and was declared the representative flower of the State.

The school children in Mississippi made the choice for that State. In 1900 the matter was submitted to a referendum, with the result that the magnolia was their nearly unanimous favorite.

The violet is also the unhesitating choice of the school children of Wisconsin. In 1909 the matter was submitted to a vote, with the result that the violet got 67,178 preferences, the rose 31,024, the arbutus 27,068, and the white water lily 22,648.

Maine's adherence to the pine cone and tassel was given by the vote of the public schools of the State, the same being true of New Mexico's support of the cactus.

According to reports furnished the National Geographic Society by the Secretaries of State and other officials of the several States, Idaho favors the syringa by common consent; the wild rose was chosen by common consent in Iowa; the Kentucky Historical Society and citizens of Kentucky prefer the trumpet vine, and the sagebrush is generally accepted in Nevada. The people of North Carolina favor the daisy generally, while through the work of the women's clubs the State of Washington held a contest which resulted in the choice of the rhododendron as that Commonwealth's flower (see pages 500 and 517).

TEN STATES HAVE SELECTED NO STATE FLOWER

In the case of Alabama it is reported that no action has ever been taken toward the adoption of a State flower, though several authorities put down the goldenrod as its emblematic blossom.

The people of Maryland are said to favor the black-eyed susan, with the sunflower second; but no formal decision has yet been made.

In Massachusetts, although the mayflower, because of its good cheer to the Pilgrims, has met with great favor, no formal selection has been made. Missouri officials say that no State flower has ever been adopted, yet several authorities publicly declare that the goldenrod has been accepted by a school vote.

New Hampshire, Pennsylvania, South Carolina, and Virginia are without State flowers, either officially or unofficially. Popular opinion seems never to have crystalized about any one flower in these States, or in the District of Columbia, which also has no floral emblem.

Although the State authorities in Tennessee advise that no State flower has ever been chosen, one outside list gives the goldenrod and another the daisy. The same is true in the case of New Jersey. The Commissioner of Education of that State writes that, so far as he is aware, New Jersey has never chosen a State flower.

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Name of State.	Name of flower.	By whom chosen.	Text page.	Illustration page.
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Arkansas	Apple Blossom	Legislature	487	501
California	Golden Poppy	Legislature	487	502
Colorado	Blue Columbine*	School Children	489	503
Connecticut	Mountain Laurel	Legislature	488	503
Delaware	Peach Blossom	Legislature	494	507
District of Columbia	No choice.			
Florida	Orange Blossom	Legislature	490	504
Georgia	Cherokee Rose	Legislature	492	
Idaho	Syringa	Common Consent	490	505
Illinois	Violet	Legislature	491	505
Indiana	Carnation†	Legislature	494	510
Iowa	Wild Rose	Common Consent	492	506
Kansas	Sunflower	Legislature	494	508
Kentucky	Trumpet Vine	Common Consent	495	509
Louisiana	Magnolia	Legislature	493	506
Maine	Pine Cone and Tassel	School Children	495	510
Maryland	No choice.			
Massachusetts	No choice.			
Michigan	Apple Blossom	Legislature	487	501
Minnesota	Moccasin Flower	Legislature	488	502
Mississippi	Magnolia	School Children	493	506
Missouri	No choice.			
Montana	Bitter Root	Legislature	489	504
Nebraska	Goldenrod	Legislature	496	511
Nevada	Sagebrush	Common Consent	488	503
New Hampshire	No choice.			
New Jersey	No choice.			
New Mexico	Cactus	School Children	498	513
New York	Rose‡	School Children	492	
North Carolina	Daisy	Common Consent	497	512
North Dakota	Wild Prairie Rose	Legislature	493	
Ohio	Scarlet Carnation§	Legislature	494	507
Oklahoma	Mistletoe	Legislature	499	514
Oregon	Oregon Grape	Legislature	500	515
Pennsylvania	No choice.			
Rhode Island	Violet	School Children	491	505
South Carolina	No choice.			
South Dakota	Pasque Flower	Legislature	499	514
Tennessee	No choice.			
Texas	Bluebonnet	Legislature	497	512
Utah	Sego Lily	Legislature	498	512
Vermont	Red Clover	Legislature	517	516
Virginia	No choice.			
Washington	Rhododendron	Common Consent	500	
West Virginia	Rhododendron	Legislature	500	516
Wisconsin	Violet	School Children	491	505
Wyoming	Indian Paintbrush	Legislature	500	515

* Legislature previously had chosen the lavender and white columbine.
† Indiana's legislature designated the carnation, but did not specify the color.
‡ The vote did not specify the species of rose selected.
§ The scarlet carnation of Ohio's choice is of brighter color than the illustration.

THE APPLE BLOSSOM

(**Malus sylvestris** Mill)

The apple blossom shares with the carnation the distinction of being the only two flowers in Nature's garden that have won two legislatures to their standards in the "battle of the buds" for popular affection. While Ohio and Indiana have pledged legislative fealty to the carnation, Arkansas and Michigan have cast their fortunes with the apple blossom (see page 501).

There are a few commonwealths which, while agreeing that a thing of beauty is a joy forever, are yet utilitarian enough to hold that when a delight to the eye ripens into a joy to the palate it is to be prized above all other forms of loveliness. Florida and Delaware share this view with Arkansas and Michigan.

Certainly, whoever has seen an apple orchard in full bloom, with its whole acres of pink and white petals set in a framework of green, will not need to wonder why two legislatures should prize especially the beauty of the apple blossom.

The apple blossom is one of the progressives of the floral world. It wants a hardy, strong, resistant posterity; so it takes careful precaution to insure cross-fertilization. The stigmas reach maturity before the anthers begin to shed their pollen, and in this way the insects have every opportunity to bring pollen from another blossom. But if the bees and the butterflies chance to overlook one, it retains its petals until its own anthers are developed and can enable it to produce an apple.

Perhaps nowhere else do we get a more striking picture of what selection may accomplish than in the case of the apple tree and its fruit. Contrast the stately and spreading winesap tree in a well-cultivated orchard with the small, knotty-limbed, scaly-wooded wild crab tree. Isn't it almost like contrasting a stately elm with a dwarfed hawthorn? And yet, is there as much difference between the ancestral crab and the descendant winesap trees as there is between their fruits?

The wild crab-apple, though a gnarled, knotty, thorny, acrid-fruited tree, is the Adam of a wonderful race. An orchardist recently counted more than three hundred varieties of apples, all of them direct descendants of this sturdy pioneer.

What could bear better testimony to the value of apples than the poetical proverbs which have crept into our language celebrating their qualities! "To eat an apple before going to bed will make the doctor beg his bread," says one of these; and another declares, "An apple eaten every day will send one's doctor far away." An old Saxon coronation ceremony carried with it a benediction after this fashion: "May this land be filled with apples."

Any one who looks at a modern apple orchard finds it hard to realize how close is the relationship of the apple to the rose, and yet they belong to the same order, Rosacæ, the apple's thorns having passed under the softening influences of a kindly civilization. Now the only thorn the apple possesses is the figurative one that is hidden in the green fruit, which small boys often discover to their anguish.

In history, tradition, and mysticism the apple has played a distinguished rôle. Through it, we are told, "came man's first disobedience, which brought death into the world and all our woe." Juno gave Jupiter an apple on their wedding day, and a poorly thrown one was the immediate cause of the ruin of Troy. Paris gave a golden apple to Venus; Atalanta lost her race by stopping to pick up one, and the fair fruits of the Hesperides were the apples of gold.

In the west of England the village girls used to gather crab-apples and mark them with the initials of their beaux. The ones that were most nearly perfect on old St. Michaelmas Day were supposed to represent the lovers who would make the best husbands. In our own land to this day girls tell their fortunes on Hallowe'en by naming the apples and counting the seeds. An apple paring thrown over the shoulder on that fateful night will form the initial of the future mate.

THE GOLDEN POPPY

(**Eschscholtzia californica** Cham.)

No State has chosen its representative flower more appropriately than California. The golden poppy, the very essence of California's sunshine, has woven its brightness into the history of the Pacific coast. During the spring months, when it covers valley, field, and mountain side with a cloth of gold, men, women, and children make a festival of poppy-gathering like the Japanese at cherry-blossom time (see p. 502).

Tradition alleges that a tilted mesa north of Pasadena when aglow with poppies in the spring used to serve as a beacon to coasting ships more than twenty-five miles away, a tale which is not wisely questioned by one who has never seen the glory of a golden-poppy field. Certain it is that early Spanish explorers saw some of the hillsides covered with these flowers and named the coast "The Land of Fire." It was "sacred to San Pascual," they said, "since his altar-cloth is spread upon all its hills."

No State flower had more lovely rivals—Baby Blue Eyes, the butterfly or Mariposa tulips, the gilias, the lupines, and the California peony have a firm hold on the affections of nature lovers in a Commonwealth from whose floral treasures the finest cultivated gardens in the world have been enriched. But the golden poppy safely outdistanced all competitors and is now the crowned queen of the land of the setting sun.

The scientific name of this poppy was acquired when a Russian scientific expedition under Kotzebue, in 1815, explored what is now California. Chamisso, the naturalist of the expedition, named it for Dr. Eschscholtz, a companion naturalist, the *Eschscholtzia californica*. It is an unfortunate name; and the extra "t" must have been inserted amid that array of consonants with deliberate intent to appall the English eye and paralyze the English-speaking tongue. Though *copa de oro,* the Spanish "cup of gold," has a poetic attractiveness, yet it is not much used, even by the Spanish Americans.

THE MOCCASIN FLOWER

(Cypripedium acauli Ait.)

When Minnesota officially decreed, in 1893, that the moccasin flower should be its favorite, it led all the States in enacting such legislation, and it is the only Commonwealth which has selected a member of the orchid family (see page 502).

This orchid loves the deep wood and seeks a rocky, sandy place, usually as remote as possible from human habitation. Once the commonest of orchids, now it is one of the rarest. The friend of the moccasin flower who said that it "is generally and destructively appreciated" accurately sized up the situation.

We have heard much about prize-fighters being overtrained and extinct mammals being overspecialized, and now it has been said that the moccasin flower is overorganized. It is preëminently a flower that believes in the doctrine of cross-fertilization, and therefore has developed so complex a system of protecting its stigmas and anthers from self-fertilization that it often defeats its own ends and must rely on root propagation.

In order to insure itself the cross-fertilization it demands, the stamens are placed back of the pistil in such a position that the pollen cannot be transferred except by outside agencies. The open end of the pouch is nearly closed with a singular, broad, scoop-shaped, sterile anther which shields the fertile anthers and stigma. The flower is so arranged that the bee which applies for a cup of nectar must come inside and do a little crowding to get room enough to stand. When the delightful draught is quaffed and the winged beggar turns to leave, it is confronted with a straight and narrow way out, and before the open can be reached our bee must squeeze under a receptive stigma covered with sticky hairs which comb the pollen grains from the fuzzy back of the visitor. But still the guest has not satisfied the flower's bill. It must carry pollen to some other flower. And so, working its way out, the bee has to creep under an anther that is placed almost across its path, getting a coating of pollen as it passes to take the place of that combed out by the pistil.

It is a short stay that the blossoms of the moccasin flower make in their annual visit to the woods. They come in May and say farewell in June. It gladdens some of the Canadian woods, reaches as far south as North Carolina, and makes Minnesota its westernmost home.

THE SAGEBRUSH

(Artemisia tridentata Nutt.)

Nevada's floral queen is not famed for its retiring disposition; neither is it known for its beauty; nor yet is it distinguished for its aggressiveness or the usefulness of its product. Rather, it is content to soften the sternness of the unoccupied, semi-arid lands of the Southwest until the farmer comes along. Into his ear it whispers the information that where it grows alfalfa will flourish. After imparting this information, it is content to endure the woes of surrendering its home. The farmer, using a railroad rail or a plank-drag, clears his ground of it and puts in its stead a field of alfalfa (see page 503).

The sagebrush belongs to the composite family, and its immediate cousins are widely distributed. They are known as the *artemisias*, and there are a host of them, many with important uses in the economy of civilization. *Artemisia absinthium* is popularly known as wormwood; from it comes the bitter, aromatic liquor known as eau or crême d'absinthe. Many of its cousins grow in Asia and Europe, including the mugwort, used by the Germans as a seasoning in cookery; southernwood, used by the British to drive away moths from linen and woolens and to force newly swarmed bees, which have a peculiar antipathy for it, into the hive; and tarragon, used by the Russians as an ingredient for pickling and in the preparation of fish sauce.

Sagebrush itself is found as far east as Colorado and is one of the dominating shrubs of the great basin which lies between the Rockies and the Sierra Nevada Mountains.

The *artemisias* derived their name from Artemisia, the beautiful wife of King Mausolus. The magnificent tomb she erected to his memory at Halicarnassus has given the name mausoleum to every elaborate tomb from that day to this. Americans thought so highly of this wonderful structure that they duplicated it in the national capital. The Southern Jurisdiction of the Scottish Rite Masons of America copied it for their great American temple, and today Artemisia's architectural conception is one of the show places of one of the most beautiful cities of the earth.

THE MOUNTAIN LAUREL

(Kalmis latifolia L.)

When Connecticut's legislature adopted the mountain laurel as the Nutmeg State's representative flower, it chose one that is a patrician in its history, a blue-blood in its family relationships, and an Adonis or a Venus in its beauty.

In its floral relationships the mountain laurel is identified with the heath family, some of its kinsfolk being the trailing arbutus, the wintergreen, the rhododendron, the white swamp and wild honeysuckles, the flaming azalea, and the Lapland rose bay (see page 503).

Because it grows in places where the bees and butterflies are not so numerous as they are in the fields, the mountain laurel has taken care that no visitor shall escape without rendering it the service of messenger. When the flower opens its stigma is erect, but the anthers are fastened down with a trigger-like arrangement, one in each of ten little pockets in the flower. The bee that creeps down into the flower for a sip of nectar releases a tiny spring, like a mouse entering a trap. The released anther flies up and dusts its pollen on the hairy body of the insect. Now, if you take this pollen and put it under a good microscope, you will see that each grain is in reality a cluster of four tiny balls resembling oranges. Indeed, in passing it may be observed that each species of plant seems to possess some special whim in the shape of its pollen, with its own peculiar devices of exterior decoration and structural form. The laurel's clusters of tiny balls ride safely on the bee as he flies to the next flower, and as he stoops for a sip of that blossom's honey they are brushed off by the ready pistil and the flower is fertilized.

Since ants can never render it any pollen-bearing service, the mountain laurel has set traps to protect its nectar from their ravages. It mounts its flowers on hairy stems and covers the hairs with a sticky substance, so that if Mr. Ant does not heed the warnings of the bristles that no trespassing will be allowed he promptly finds himself wading through a field of glue that pinions his feet until he dies an ignominious death as a would-be thief.

No friend of the stock-raiser is the mountain laurel. In the springtime, when the cattle-growers in the valleys of the East drive their herds to the grazing farms on the mountains, the laurel is the greenest thing in sight. A winter on dry fodder has made every animal hungry for a change of diet; so that, although the herd is urged on, one nip after another is taken of the laurel bushes along the roadside, until, the first thing the drover knows, two or three members of his herd have an overdose of laurel, with "blind staggers" as a result. Usually a day or two brings the affected cattle around, and once on the range, they seldom or never touch the laurel. Only when there is nothing else green in reach will they leave the straight and narrow way of abstinence to indulge in "sheep kill," as it is sometimes called.

There are many plants that are poisonous, a quality developed as a weapon of defense. And what would we do without our plant poisons? Opium, which in spite of its abuses is a boon to humanity, is merely the self-defense of the poppy turned to the service of man. The laurel, too, belongs to the class of poison-producers. If let alone it drapes the mountainside with lacy bloom, and never hurts any creature that treats it with respect; but woe betide the one that dares to eat it.

The mountain laurel is distinctly an Eastern plant. It flourishes from New Brunswick to the Gulf of Mexico, but, unlike so many flowers that have kept pace with man as he has followed the star of empire westward, it has never crossed the Mississippi Valley. Once there came to the United States a Swedish naturalist, Peter Kalm. After making the acquaintance of our American flowers, he decided that the laurel was his preference. He gathered some young plants, took them to Europe, and introduced them on many a fine estate. He also contributed to the plant its scientific name, "kalmia."

THE COLORADO COLUMBINE

(**Aquilegia coerulea** James)

The school children and the legislature of Colorado do not agree upon the issue of a State flower. Both have voted the honor to the columbine, but the legislature nineteen years ago awarded the wreath of fame to the white-and-lavender, while six years ago the school children chose the blue-and-white. An outsider may declare his neutrality and admiration for both (see page 503).

It is reputed that in no other region does the columbine grow more beautiful or so large as in Colorado. The people of the Centennial State have no hesitancy in declaring that their flower is four times as large as the "Down East" species.

A native of the lower mountain regions, blooming from April to July and ranging from Montana to Mexico, the columbine cheers every pathway that leads up toward the realm of summer snows.

The name "columbine" comes from the Latin for dove, and was applied because the flower has a fancied resemblance to a group of dainty little doves. Its other name, "aquilegia," was given it because the spurs of the flower possess a resemblance—somewhat indistinct in the Colorado blossom—to the talons of the eagle. Thus the columbine may with equal claim play the rôle of dove of peace or eagle of war.

It has many exquisite relatives, among them the clematis, the anemones, the hepaticas, the rues, the spearworts, the buttercups, the marigolds, the larkspurs, and the monkshoods.

The various species of columbine have a wide range. The flower possesses all Europe and occupies that part of Asia between northern Siberia and the Himalayas.

In the northern half of the world there are about fifty varieties of columbine, of which some twenty occur in North America.

THE BITTER ROOT

(**Lewisia rediviva** Pursh)

The bitter root played a part, though a small and inconspicuous one, in that epic of American exploration, the Lewis and Clark Expedition. It was the specimen taken from the herbarium of Meriwether Lewis that was first described by the botanist Pursh and named *Lewisia rediviva* (see page 504).

The acquisition of a dignified Latin name seems to have been the first forward step in its career; from the simple ornament of the primeval wilderness and friend of the Indian, this blushing beauty has risen to the magnificent position of chosen flower of Montana, the Treasure State, and has given its English name — bitter root—to a mountain range, a river, and to the famous Bitter Root Valley.

Bitter Root Valley, the depression which separates the Bitter Root Mountains from the Rockies for a distance of about 105 miles, long before the white man penetrated the great West, was a favored spot. The snow melted earliest within its sheltered heart; the storms blew less fiercely over its mountain walls; spring smiled there soonest, and answering smiles seemed to brighten the meadows when the bitter root held up its colored bowls to catch the sunbeams.

The Indians took a practical interest in the plant, for they knew that its thick, starchy roots could furnish food. When their brown covering is removed and the fleshy part dried, these roots will dissolve in water almost like pure starch, and when heated become a nutritious paste. This value was sufficient to give the plant great importance in the eyes of the savages, and they named the near-by mountains and river after it.

What stirring incidents of pioneer days the bitter root may have witnessed we do not know. Gradually its old friends, the Selish Indians, were replaced by white settlers, and the lovable flower seems to have had no difficulty in winning the hearts of the newcomers. Meantime mining strikes, boom towns, cow-punchers, Vigilantes, built the generous, romantic, picturesque structure of Montana's early history, which was crowned in 1889 with statehood. It was not until 1895 that the citizens of the Commonwealth found time from developing the abundant resources of the Treasure State to choose a State flower; when they did so, by legislative resolution they voiced their affection for this eager-faced, native blossom—the bitter root.

Of course, the habitat of *Lewisia rediviva* is not confined to the valley it has named, nor to the State of Montana. The visitor to Yellowstone may find an occasional specimen, although it is rare within the limits of the park. It is naturally most plentiful in dry, sandy, or gravelly soil, such as may be found along the Lewis and Bitter Root rivers.

Nuttall, in 1834, said of it: "This curious plant constitutes a very distinct natural order," and decided that it was most nearly related to the cactus family. The flower he describes as "very large, wholly like that of the cactus, rose red." Since, however, botanists have classified the bitter root as allied to the purslane family, *Portulacaceae*. Its resemblance to the gay garden portulaca, a native of the hot plains of southern Brazil, is apparent; but it is not so easy to connect it with that persistent weed, the common purslane, which the farmer has condemned by his forceful comparison, "As mean as pusley!"

The bitter root's relations, poor or otherwise, are of no importance in the eyes of the Montanan, who cares only that it was found rooted in the soil and has made itself inseparable from the history of his wonderful country.

THE ORANGE BLOSSOM

(**Citrus sinensis** Osbeck)

Who that has seen loved ones given in marriage, with the orange blossoms lending the touch of their beauty to the bride, can help but sympathize with the sentiments of Florida's legislators when they enacted into law the State's affection for the flower of its favorite fruit? And while the orange blossom is admired and honored by its association with the bridal hour, the fruit is known wherever men and women who love good things to eat foregather (see page 504).

While the orange is not native to America, being in reality a comparatively recent immigrant, there are more orange trees in the United States than in any other part of the world. Fourteen million trees were growing in this country in 1909, two for every thirteen people. Of these, Florida had nearly three million, while most of the others were in California.

The orange appears to have originated in China and the Burmese Peninsula. Thence it was carried to India and Hindustan. There the Arabs met it, fancied it, and gave it a footing in Mesopotamia at the beginning of the tenth century. From Asia it was introduced into northern Africa and Spain, traveling with the conquering armies of Islam. It journeyed with the Spaniards from Europe to South America, where it was found by missionaries from this country, who sent some small trees to Florida and California. These took root, thrived, and straightway the American orange became one of our chief blessings.

In favorable seasons and in well-kept groves, trees bear from 400 to 1,000 oranges each. Being slow in reaching maturity, they are slow also in giving up their privilege of producing their golden fruit. Carefully tended trees usually yield for fifty years, and some are productive for eighty years. Occasionally a sturdy centenarian is found bearing fruit in abundance; but so great has been the improvement of the orange under modern methods of plant-breeding that the product of these hardy old trees seems bitter and unpalatable, although it may have delighted ten thousand feasters in its day.

Those who have not been privileged to visit an orangery and there taste the nature-ripened fruit in all its golden lusciousness cannot know fully how delicious an orange may be. The orange that goes to market and must wait weeks before it can get out of the hands of the retailer and into those of the consumer is packed before it is ripe, and few fruits gathered unripe can ever be as delicious as those which have hung on the spit of the twig and toasted to a proper flavor before the sun.

The orange tree is an evergreen, and cultivated varieties seldom exceed 30 feet in height. Blossoms, green oranges, and ripe fruit are often seen on the same tree, but usually the trees bloom in the spring and ripen their fruit in the fall. The oily, acrid peel of the orange is an effective means which Nature employs to seal up her packages of fruit. The germ or the insect that could break through a healthy orange skin would be a brave and persistent creature.

THE SYRINGA

(**Philadelphus lewisii** Pursh)

The queen of Idaho's wild flower garden is by unanimous acclaim the modest syringa, *Philadelphus lewisii*, which is limited in its territory to the western group of States, from Montana and Wyoming to Washington and California. Its flowers matching the orange blossom in beauty, its bursting buds appearing to be fairly pin-cushions, its fragrance as delightful as the odors that sweep over Elysian fields, its leaves a delicate, soft, shimmering green, the Idaho syringa is a shrub well equipped to awaken enthusiasm in every lover of flowers (see page 505).

The syringa belongs to the saxifrage family, which has some 250 species scattered throughout the North Temperate world. It has many close relatives—various species of Philadelphus, which is the botanical name for all the species we in our common garden variety of nomenclature call the syringas. There is *Philadelphus grandiflorus,* which grows in the South Atlantic States and is famous for its rich and fragrant flowers; *Philadelphus inodorus,* with the same range, but without the same fragrance; *Philadelphus hirsutus,* dwelling in the North Carolina-Alabama mountains and arraying itself in hairy leaves; *Philadelphus coronarius,* the mock orange of the Eastern States and everywhere loved for its beautiful and wonderfully fragrant blossoms.

The syringas are unfortunate in their popular name. Ptolemy Philadelphus loved them and they became *Philadelphus* this or *Philadelphus* that. But the world at large wanted a name more to popular liking and by common consent they became syringas. Now that would be all right if it did not happen that syringa is the botanical name of the lilac, to which family the popularly named syringas bear no relation.

THE VIOLET

(Viola)

One does not often meet two flowers so different in appearance, so dissimilar in disposition, so unlike in their tastes, as the modest blue violet and the gorgeous goldenrod, the one content to be seen only by the eyes that search for it, the other seeking the spotlight of every landscape, so that no eye may overlook it (see page 505).

And yet the little violet blossom and the big yellow flower are rivals for the highest honors in flowerland. Three States have adopted the violet and a fourth is not yet sure on which side of the issue between them it will finally line up. Illinois has cast its lot with the violet by legislative action. Nebraska has come out for the goldenrod by the same route. Rhode Island and Wisconsin have by the votes of their school children declared themselves champions of the violet. On the other hand, Missouri and Alabama are reputed to favor the goldenrod, although no action recognized by either State government has been taken. New Jersey is agreed that her flower shall be one or the other, and there is a rumor that she wishes it could be both. Yet no one can blame this indecision on the lack of grounds for choice between them, for there is certainly little else than choice. Habit, color, haunt, disposition, almost every point, is different in them.

There are many violets scattered over the country, among them the "bird-foot," the "common," the "arrow-leaved," the "marsh," the "sweet white," the "lance-leaved," the "downy yellow," and even the "dog." But, whatever their distinctions, they are all good to look upon, interesting to study, and modest to a fault. Best of all, they manage in their several species to gladden all communities from the Arctic to the Gulf and from the Atlantic Ocean to the Pacific.

Perhaps first among all the species is the common or purple hooded. Its royal color, its gentle dignity, its rich profusion, its wide range of territory, have given it a deep hold on popular affection. The different species are distinguished as stemmed and stemless, bearded and beardless, by the character of the spur, the color of the flower, and the shape of the leaf. In most of them the lower petal is prolonged backward so as to form a spur and a nectar jar, which is usually protected by little tufts of hair at the throat of the flower.

Some violets have put away the ordinary processes of inbreeding and now strive, by producing liberal supplies of nectar, to attract the bees and butterflies and to enlist their services as carriers. But, knowing how readily their insect friends are wooed away by the more showy, more thickly clustered flowers of other families, they have not abandoned entirely the old idea of self-fertilization. If they fail to set seed by the cross-fertilization method, they promptly develop small, inconspicuous blossoms that fertilize themselves, and therefore enable the plant to produce sufficient seeds to prevent its extinction by the race-suicide route.

One writer who knows the poetry of flowerland tells us that the witch-hazel is not the only sharpshooter of the autumn wood. Down among the dry leaves, he declares, it has a tiny rival, the blue violet, with which it occasionally exchanges a salute. The latter closes its reign as a debutante among the blossoms in May. Then it settles down to the stern realities of life and the production of seeds. As the late autumn comes, its pods begin to force out their tiny seeds just as the small boy shoots a cherry stone by pressing it between his thumb and finger. Each pod in its turn fires away, hurling the seed babies as far as 10 feet, with an admonition that they creep down into the soil, there to dwell in darkness, silence, and inactivity until the winds whisper to the pines the glad news that spring is coming, and that message is passed along to the seeds under the snow.

Violets have figured in many of the romances of civilization. An old tradition has it that the flower was raised from the body of Io by the agency of Diana. Homer and Virgil knew its delicate beauty, and the Athenians were never so much complimented as when they were said to be violet-crowned.

The pansy that we love so well and for which our English cousins have so many nicknames is, after all, only a violet that has had a chance. Some call it "Heart's-ease," others "Meet-her-in-the-entry," others "Kiss-her-in-the-buttery," and still others "Jump-up-and-kiss-me" and "Tickle-my-fancy."

THE ROSE

Four States consider the rose, in one form or another, their emblematic flower. New York school children adopted the rose without any adjective limiting the selection. Georgia, by legislative resolution, considers the Cherokee rose as her flower. Iowa, by the same method of choice, made the wild rose hers. North Dakota's legislature selected the wild prairie rose for that State.

The Cherokee rose, which has white petals and yellow stamens, was imported from China and is believed by botanists to be the one from which the Chinese developed the fragrant double Banksian roses.

Certain it is that from the standpoint of the florist, if not from the standpoint of general sentiment, the rose is our national flower. And yet the florist's rose, which delights milady's boudoir with its fragrance as well as with its beauty, is one of the most imperfect of flowers. To the wild flowers it is deformed, a freak, unable to fight its own way in the war of blossoms for place and position.

That busybody, man, who is always making flower and insect, plant and animal, all serve his purposes, went out and gathered some natural roses and started to make them over to meet his own ideals of beauty and fragrance. But how he did interfere with their perfection when he tried to magnify their beauty! He, in very fact, made them unfit for survival in the garden of Nature. No natural rose was ever such a poor seed-bearer as the American Beauty or Jacqueminot. Set these out to fight for themselves and they would disappear forever—for the more perfect the rose, from the flower-show standpoint, the more imperfect from a natural standpoint. And why? When the florist took this rose in hand he concluded it had too many stamens and not enough petals, so one by one he converted the stamens into petals, step by step he bred out of the flower the ability to set seed and bred into it the quality of looking handsome, until it is what we have today.

Other flowers, like the lotus of Egypt, the chrysanthemum of Japan, come and go, but still the rose is queen of the flower world. That maiden of ancient civilization who sang of it as being full of love, the servant of Aphrodite, cradling itself on its nodding stalk and playing with the smiling zephyrs which kiss it as they pass, beautifully expressed what many a modern admirer of the rose has felt.

Again, the rose is as famous in legend and history as for its beauty and fragrance.

For three hundred years the youngest peer of France, on the first day of May, brought to the court in an elaborate silver bowl the annual tribute of roses. In Egypt mattresses for the wealthy were made from the flowers' sun-dried petals. The Romans placed them at the entrance of the banquet hall when the things which transpired within were not to be mentioned without; hence our *"sub rosa."* In China roses play an important part in funeral rites, and in some parts of Europe girls prick their fingers, extract a drop of blood, and bury it under a rose bush to insure the color in their cheeks.

Then there is the commercial side of rose culture. It is said that there are more than 100,000,000 of the cut blossoms sold annually in the United States. Many new varieties are propagated each year. One European collector, trying to keep pace with the constant additions to the list, has gathered 4,200 different kinds and still finds his collection incomplete.

How long it has been since man first learned to develop new qualities in the rose is not known. That the Romans knew the secret of flower breeding is certain. And it appears that perhaps in even more remote time the Japanese and Chinese gardeners were crossing varieties and producing hybrid species. The trade in attar of roses has been hard hit by the war, and many are the hands that once labored to delight the world with the bottled fragrance of the rose, but which now work to produce the death-dealing thunderbolts. It requires ten tons of rose petals to make a pound of the attar—20,000 pounds concentrated into one! A pound of this luxurious perfume is worth $200.

THE WILD ROSE

(Rosa carolina L.; Rosa humilis Marsh)

There is nothing about the simple loveliness of the wild rose to suggest that she is a queen who has never come into her own; yet, as the original from which all the reigning beauties of the rose-fancier's garden and the florist's window have been developed, royal honors are her due. She resembles rather a little flower princess too fragile to brave the dangers of rocky hillsides or meadows close to busy highways. However, Nature has provided this seeming innocent with arms for protection and wiles for perpetuation (see page 506).

Sharp downward-turning prickles discourage cattle from eating the foliage and prevent the field mice from climbing the stems to steal the fruit in the autumn, when the hips, or berries, are ripe. These prickles also help the plant to hold its position when it grows on the side of a bank.

The delicate fragrance of the usually solitary pink blossoms, and the solid center of bright yellow stamens, rich with pollen, attract a variety of insects. Bumblebees, requiring a firmer support than the petals would give, alight directly on the center of the flower, so that pollen from other flowers is likely to reach the pistil. Occasionally self-fertilization takes place in a simply constructed blossom which yields abundant pollen.

"The wild rose never outstays St. Mary Magdalen," is a fairly true English saying, for her day, July 22d, generally ends its season. Each delicate flower has about two days of life. During rainy weather the petals fold over the green stigmas and the yellow stamens to protect them from moisture. The blossom closes with the last rays of daylight and reopens as the sun dispels the darkness, so that only the careful observer and the early riser realize that it "draws the drapery of its couch about it and lies down to pleasant dreams." It is true that some wild roses may be found open at night, but these are the ones whose seeds are fertilized and whose pollen is carried off, so that rain and dew are no longer to be feared.

The bright red "hips" have a pleasant flavor, but their outer covering irritates the throat, and today they are left for wild things to eat. Old writers refer to them as highly esteemed delicacies. "Children with great delight eat the berries thereof when they are ripe, and make chaines and other pretty geegaws of the fruit: cookes and gentlewomen make tarts and suchlike dishes for pleasure," testifies one. We are rich enough in more luscious fruit today to forego this doubtful dainty. The "hip" is designed to tempt the birds, which sometimes drop the seeds it contains miles away from the mother plant.

Large swellings or galls are frequently found on the rose bush. "Robin's Cushions," the country people call them, although they have nothing to relate them to the robin except a somewhat reddish color. Their origin is found in a kind of wasp—the rose-gall—which punctures a bud and lays its eggs inside. Numerous larvæ are hatched and later creep into the leaf tissue, while the bud swells into a gall. The taste of these objects is sufficiently unpleasant to have gained for them a reputation for medicinal virtue in earlier days.

The choice of the wild rose, by common consent, as the State flower of Iowa is only one of many tributes to it. English poetry breathes its fragrance in many pretty verses. The scenes of Scott's "Lady of the Lake" are profuse with "wild rose, eglantine, and broom." Yet so elusive is the charm of this blossom's simplicity that it remained for a great American composer to express it most truly in the wistful sweetness of music.

THE WILD PRAIRIE ROSE

(Rosa blanda)

North Dakota's floral queen is the species known to botanists as *rosa blanda*; to others by various names in different localities. Ranging from Newfoundland to New Jersey and westward to where the Rocky Mountains cut off its march toward the land of the setting sun, it is known here as the "smooth," there as the "early," and elsewhere as the "meadow." It is indeed a bland rose, for usually it is entirely unarmed, with neither true thorn nor bark-attached prickle to defend itself. Now and then it may possess a few weak prickles as a sort of family crest or to show its friendliness with its thorny relatives. Its flowers are a trifle larger than those of the climbing rose and change from pink to pure white.

The wild rose has many relatives. Among these are the strawberry, with its tufted stem, the cinquefoils, with their creeping traits, the spikelike burnett and agrimony, the scrambling blackberries and raspberries, the blackthorn and the hawthorn, the cherry, the mountain ash, the apple and the pear—every variety of size and shape and style, from the lowly creeper to the big spreading tree, within the limits of a single flower family.

THE MAGNOLIA

(Magnolia grandiflora L.)

When Louisiana's legislature and Mississippi's school children awarded the magnolia the high praise of rating it first among the flowers of their respective States and declaring that it best typifies their ideals and expresses their aspirations, they selected a floral emblem widely known and universally admired, not less for its exquisite beauty than for its delightful fragrance. The Chinese regard the magnolia as symbolical of candor and beauty, and whoever has known the sweetness of its perfume and the charm of its blossom can appreciate the tribute (see page 506).

There are many kinds of magnolias, each with its own peculiar attractions. But queen of them all is the *grandiflora*, which has borrowed all the beauties of the laurel and the rhododendron. It has a straight trunk, two feet in diameter, which often rises to a height of 70 feet. It is an evergreen, with leaves not unlike those of the laurel, glossy green on top, rusty brown beneath, and oval-oblong in shape. It bears a profusion of large, creamy white, lemon-scented flowers. As these latter reach their final stages before the petals fall, they turn a pale apricot hue. When fruiting time comes it is a cone of dangling scarlet seeds that we see.

There are numerous other varieties indigenous to America, among them the *glauca*, a beautiful evergreen species found in low situations near the sea, from Massachusetts to Louisiana. Another is the "cucumber tree," well known for its small fruits resembling cucumbers. Its range is from Pennsylvania to the Carolinas, mostly in the mountains. Its wood is much prized by farmers for making hay ladders, bowls, and other implements and utensils where a hard, non-warping material is needed. Still another species is the umbrella tree. The tulip tree, also a member of the family, is of American origin.

The Chinese have a species of magnolia which gives them a medicine for healing and a flavor for improving the gustatory qualities of boiled rice. It is said that India has a species that surpasses all others in size, having a trunk which sometimes attains a girth of 12 feet and reaches a height of 150 feet. Western Europe has gathered species from China, Japan, India, and America, and although all of them are imported, they seldom reach the magnificence in their native habitat that they attain under the careful attentions of the landscape gardeners in the climes of their adoption.

The beetle is the special insect patron of the magnolia. Abundant pollen and nectar in profusion suit it so well that instead of making a fleeting visit to a flower it shelters itself in the soft petals and stays and stays until dispossessed by the fading of the blossom. Then only does it go to another field to pasture; but as it goes it carries liberal quantities of pollen grains with which to reward its new host for the food and drink and shelter it seeks and secures.

THE PEACH BLOSSOM

(Amygdalus persica L.)

Who that has wandered through a full-blown peach orchard, inhaling the fragrance of a million buds and feasting the eye upon acres of heavenly pink, can fail to applaud Delaware's choice of the peach blossom as her State flower (see page 507).

A deep claim has the peach upon national admiration as well as upon local affection, for it ranks second among all the inhabitants of the American orchard in the money value of its annual crop of fruit. It yields about two bushels for every family in the land, and the product ranges from the delicious Elberta to the small, neglected cling-stone of the wayside volunteer tree.

Of ancient lineage is the peach. Indeed, so far back can it be traced that its origin is lost in the mazes of Chinese tradition. Travelers from Persia saw it in China, loved it, and carried it home with them. Here they gave it firm root and endowed it with the name it bears. Thence it traveled westward, a sort of pacemaker for the Star of Empire. The Romans in the days of Claudius brought it to Italy's shores and thence carried it to Britain. By the time of the discovery of America it had made all Europe its friend and was ready to join the pioneers in shipping for America.

Before the War of 1812 it had crossed the Mississippi and was found as far west as Arkansas. In those days there were many hardy varieties, and where they once gained a foothold they maintained it without human aid. To this day one may journey through the Blue Ridge and Allegheny Mountains and see gnarled and knotty old trees, which must have outlived several generations of men, still bearing their small but delicious cling-stone fruit.

THE CARNATION

(Dianthus caryophyllus L.)

This beautiful blossom belongs to the pink family. When man first looked upon it and conceived the intention of leading it captive to grace the flower garden and to add to the shekels in the florist's purse, it was the modest little clove pink, such as may still be seen on the slopes of turf that succeed the great chalk cliffs of the Cheddar Gorge, in Somerset County, England. The Briton considers it the rarest wild flower in Nature's garden (see pp. 507 and 510).

How long it is since the carnation joined the ranks of domesticated flowers no one can say with certainty, but that it was a favorite flower in Queen Elizabeth's day is certain. The "Winter's Tale" was published in 1623. In that play Shakespeare tells us that "the fairest flowers of the season are our carnations."

Many honors have been paid the carnation by man, and in its turn it has helped honor the memories of those who have counted for something in our lives. The scarlet carnation was William McKinley's flower, and to this day Americans who pause to honor his memory wear it on his birthday. When the movement for an annual "Mothers' Day" reached important proportions, it was a white carnation that was set aside as the badge of her purity, her goodness, and the nobility and self-sacrifice of her soul.

Horticulturists have vied with one another in producing carnations of rare beauty, some of which have won nation-wide reputations and names. Men have given many thousands of dollars for control of a new variety.

Two States have by legislative action adopted the carnation as their favorite flower—Ohio and Indiana. Ohio has taken the scarlet carnation (of a brighter color than that pictured on page 507) as emblematic of its spirit, and Indiana has chosen the carnation, without defining the color.

THE SUNFLOWER

(Helianthus annuus L.)

It is fitting that such a genuinely American Commonwealth as Kansas should choose a genuinely American flower to represent it at home and abroad. And the sunflower is such, for the Old World's eyes never fell upon it until the days when the exploration of the New World began. The Incas of Peru and the Hurons of our own country alike were enjoying it as a cultivated crop when the white man first visited them. They used it much as the bamboo growers use the bamboo—as a Jack of all Services. Its seeds they found useful alike as food and as the raw material of a home-made hair oil; its petals were utilized in the manufacture of a yellow dye; its leaves served them as fodder and from its stalk they secured their thread (see page 508).

The sunflower, along with the goldenrod, the black-eyed susan, the asters, and many others, is a member of the composite family, the Napoleons of finance and industry in the flower world. If there were politics and politicians among the flowers, there would be a lively campaign against the "trusts," for the composites seem bent upon a monopoly of the nectar business. They are efficiency experts, knowing how to crowd hundreds of blossoms into a single head, with brilliant ray flowers at the edge to attract their insect customers. It has been estimated that one-ninth of all the flowering plants of the earth have joined the composite group, and that it includes in the United States and Canada alone more than 1,600 species.

The wild sunflower is the one that gave Kansas the title of "The Sunflower State." Its range extends from the Atlantic seaboard, through Kansas, and from the Northwestern Territory to the Gulf of Mexico.

Like the potato, which is the world's most productive food crop, like maize, which has marched to the ends of the earth, and like the tomato, which has come to enjoy a place all its own in the culinary establishments of civilization, the sunflower is a native American gone forth to render rich recompense to other nations and other continents for the plants they have given us. In China its fiber is used as an adulterant of silk; in southern Russia the seeds are widely employed both in making oil and as a substitute for our peanut. The pocketful of sunflower seed plays the same rôle in some parts of Russia as the bag of peanuts here. Much of the sunflower oil produced in Russia is used in making soaps and candles. Europe, Asia, and Africa all cultivate this plant.

When the Spaniards first visited Peru they found the sunflower as much the national flower of the Incas as it today is the State flower of Kansas. The Incas gave it a deeper reverence because of its resemblance to the radiant sun. In their temples the priestesses wore sunflowers on their bosoms, carried them in lieu of tapers, and otherwise used them in their services. The Spanish invaders found many images of sunflowers wrought with exquisite workmanship in pure virgin gold. These wonderful images, among many others, helped to excite the cupidity of the conquistadors and thus to bring about the downfall of the Incas.

In North America there are about 40 known species of sunflower. South America has about 20 species that do not exist on our own continent.

THE TRUMPET VINE

(Bignonia radicans L.)

Who that has studied the enthusiasm with which that frail and filmy creature, the ruby-throated humming-bird, flits from flower to flower of the trumpet vine, burying its head and shoulders deep in the enveloping petals as it strives to drain the last drop from the floral honey cup, or who that has observed closely the constant effort of the trumpet flower to captivate this capricious, swift-winged beauty can doubt the community of interest between them. When Audubon came to paint his plate showing the ruby-throats in life colors, he portrayed them hovering about a cluster of the trumpet vine's flowers (see page 509).

Kentucky has made the trumpet vine her State flower, and few States can boast of such a brilliant member of the sisterhood of emblematic blossoms. Growing on a vine that has as much vitality as a Lexington thoroughbred and as much resourcefulness in holding its own in the gruelling free-for-all race for existence as any star of the turf, the trumpet flower is well beloved by those who live within the Blue Grass State and by a host who enjoy no such fortune.

Except in the West, the vine is no blatant intruder in places where it is not wanted and never drives the careful farmer distracted by a disposition to preëmpt land which he dedicates to grass. Rather it seeks the moist rich wood and thicket, desiring only to have its chance to survive in this habitat without intruding upon every kind of landscape. Invited to do so by the lover of flowers, it willingly comes out of the woods and forms a delightful arbor for any porch. Sometimes, in parts of the country where it did not originally grow wild, it lives as an "escape" from the portico arbor of the well-kept home. It begins to flower in August and seeds in September. From Jersey's shores to the Mississippi's banks, from the Lakes to the Gulf, it finds hospitable soil and genial weather.

Were it human, the trumpet vine would perhaps not be loved so well. Its instincts of survival are so strong that it does not hesitate to trample upon the rights of weaker neighbors in its efforts to reach the top. Sometimes its aërial rootlets carry it upward or onward until it has stalks as much as 40 feet long. Ever reaching up and striving for a place with the elect of the plant world, it would be in danger of being called a "social climber"; but as a flower we can admire its determination to win its place in the unhampered room at the top.

THE PINE CONE AND TASSEL

(Pinus strobus L.)

When the school children of Maine elected the pine cone and tassel as the floral standard bearer for their State, they not only followed the precedent that made theirs the "Pine Tree State," but they honored the first-born of the flowering plants; for science tells us that in the long process of evolution, when some of the members of the fern family began to strive for higher things, their first success on the road to perfection was to become cone-bearers. And so today the cone-bearers remain the great middle class in the flower world between the plebeian fern on the one hand and the patrician rose and the noble lily on the other (see page 510).

How wonderful and how charming is the story of the pine's household economy! It is so equipped that it can make its home down in the lands of tropic warmth or up in the regions of polar snow. The last tree one meets, almost, on a climb to the high summits of snow-capped mountains is the pine. The gales may blow so hard and so persistently that not a limb is able to grow on the windward side; but, twisted and misshapen, the pine still lives on.

Though the winds seem harsh to the pine, they are none the less its good friends. It employs them as the messengers in the spreading of its pollen. The pistils and stamens grow in separate flowers, and the breezes transport the pollen from tassel to cone and from tree to tree. Each grain is provided with two tiny bladders which give it buoyancy and enable it to take a balloon ride. In the region where the winds blow the hardest they serve the conifers best, for there insects are scarce and the trees would be exterminated if they had to depend on such pollen-bearers. This is only another evidence of the natural ability of the pine to adjust itself to its surroundings. The tree that could go on and on through numberless generations evolving a conifer out of a fern naturally would have adaptability enough to meet the wind both as foe and friend.

As a messenger the wind is wasteful, and so the pines, to perpetuate their species on earth, must produce vast quantities of pollen.

In the flowering season of the pines the air is filled with tiny grains of yellow dust, the ponds are covered with a golden scum, and one sees evidences of pine pollen everywhere. This pollen is shed from small tassels which occur at the base of the green shoots that form the current year's growth. Upon the under side of each scale of every cone is a tiny bag of jelly. When a pollen grain flies that way and gets stuck in this little bed of jelly, the scale closes up so as to be water—and even air—tight. Some of the pine species even varnish the openings so as to make them safe. Within this cozy chamber the miracle of life is consummated, and ere long there is a small seed, with its wing attached, mature and awaiting the day when the friendly wind will carry it to where it can plant itself and grow up into a big tree.

When the cone dies, the seeds it harbors live on. During the winter months the squirrels improve every fair day to gather pine seeds for their present needs and their future wants. If you have ever watched a squirrel open up a pine cone, you have wondered how he learned so well the art of getting the seeds out easily. He handles the cone as adeptly as a trained athlete might handle a weight. He takes it in his fore feet, hurls it bottom upward, as if he were a professional juggler, and then begins to gnaw at the base of the lowest row of cells. Presently an opening reveals a seed or two. Thus he goes around and around the cone, taking each scale in its order, and before you could do it by hand he has unlocked every one of them.

The cones the squirrels do not get hang on as if they were the "pimmerly plums" of Uncle Remus' story. But when the first faint evidences appear that the balmy warmth of spring is to succeed the icy breath of winter, there comes a popping and a cracking in the pine forest, and the seasoned woodsman knows that it is the cones firing salutes of welcome to the approaching spring. As the months pass on, one by one the cones dry out, the bended bows of their many scales are released as the drying-out process pulls the hair-trigger that holds them, and ten thousand thousand winged seeds fly out into the world with the ambition to transform themselves into trees.

It is interesting to gather a number of different species of pine cones before they have begun to open and watch them do so. Some of them jump around like things possessed as the scales on which they rest open up; others roll this way and turn that. When the last scale is open and the last seed is out, the cone may be three times as large as it was formerly and a hundred or more seeds have been set free. Alas, how few of these ever become trees. We are told, for instance, that a big tree in California produces from 100 to 200 seeds to a cone and as many as 1,000,000 cones to the tree—that is, 100,000,000 seeds in a single season.

There are 42 native species of pines in the United States. They make the woods of Maine and other northern States largely evergreen. Countless generations of warring with the elements led them to adopt the needle instead of the leaf, for needles do not oppose the free passage of the wind or afford snow a platform which could crush them. Hence it is that the pines "bind the tottering edge of cleft and chasm and fringe with sudden tints of unhoped-for spring the Arctic edges of retreating desolation."

THE GOLDENROD

(Solidago nemoralis Ait.)

By legislative action the State flower of Nebraska, in high favor, though not yet adopted, in Missouri and Alabama, and considered with the violet for the honor in New Jersey, the goldenrod disputes with the violet first place in State preferences (see page 491).

Not only is the goldenrod a member of one of the most widely known and versatile flower families of the world, but its own household is made up of a large number of brothers and sisters. We are told that there are 85 species of goldenrod in the United States. A few of them have crossed the border into Mexico and some have even invaded South America, thus indicating that there is such a doctrine as "manifest destiny" in flower land as well as in international politics. Over in Europe there are people who like our goldenrod so well that they grow them in their gardens, as we ourselves would surely do were it not for their wonderful ability to shift for themselves.

All of these species are grouped as members of the genus *Solidago*, a name which comes to us from ancient Rome, where they thought the goldenrod a possessor of healing powers strong enough to entitle it to be called the "makes whole" plant. The species range from the stout goldenrod, otherwise *Solidago squarrosa*, which lives up to its name, and the showy goldenrod, which does likewise, to the sweet-scented goldenrod, from which a delightful drink may be brewed, and the slender goldenrod, otherwise *Solidago tennifolia*. There is one species which an Irishman must have named, for it is called the white goldenrod. It is just about as logical to speak of a white blackbird, and the botanists get around the inconsistency of its color by calling it *Solidago bicolor*.

There is also a species for every locality—the "alpine" for the mountains, the "seaside" for the brackish beach, the "bog" for the deep, soft wood, the "swamp" for the waste places.

The goldenrod is one of the merchant princes of the plant world. "Quick sales and short profits" is its motto, and it has arranged its wares so that the insects may find whatever they want and in any quantity. The result is that the field covered with goldenrod is an American entomologist's paradise.

In the days of Queen Elizabeth the goldenrod had a great reputation for healing wounds and was imported in considerable quantities and sold in the London markets in powder form at half a crown a pound. In range the goldenrod covers the continent with its cloth of gold. North, south, east, west, on mountain and by sea, in dry field and in wet swamp, it flourishes in its season and warms every landscape with its rich color.

THE TEXAS BLUEBONNET

(Lupinus texensis Hook)

When the legislature of Texas came to consider the issue raised by the flowers in their respective bids for Lone Star fame, it had a wide range of candidates, active and receptive, from which to choose. There were primroses and phloxes, euphorbiæ, salvias, Texas plumes, Texas fire-wheels, rain lilies, and Indian paintbrushes, but the Texas bluebonnet—a different flower, by the way, from the bluebonnets of Europe—won the day, and is crowned queen of Texas' floral empire. It blooms in the spring and has a range rather more limited than most of the State flowers. One authority tells us that it is a great home body and never crosses the Texas line or the Mexican border. But when it is recalled that Texas is approximately as large as all the Atlantic Seaboard States down to and including South Carolina, it will be seen that it has a rather extensive habitat at that.

To the botanist the Texas bluebonnet is known as *Lupinus* because of its reputedly insatiable appetite. For generations it was believed that flowers of this genus were wolfish in the amount of plant food consumed, and that they virtually exhaust the soil on which they grow. Hence their name of wolf flowers. Happily, this charge has been proved an unjust one. The lupines are, it is true, found in sterile, waste lands, gravelly banks, exposed hills, and like places; but they do not impoverish the land. Rather they choose poor soil for their home, adding to the landscape's beauty and fertility.

There are about seventy species of lupines in America, mostly in the West. They can justly lay claim to being among the most brilliant of all the denizens of Nature's garden. Many a sandy waste they transform into an oasis of color. The blossom has five petals, the upper one an advertising banner announcing to the passing bee that the table within is laden with choicest viands, and that no daintier food was ever served in flower land. There are two side petals which serve as landing stages for the aëronauts of insectdom and two others which touch at the bottom and resemble the keel of a boat. When the bee alights on the landing stage the keel opens up, and the table, all set and garnished, greets the hungry visitor's eye.

The lupines sleep at night. Some species transform their horizontal stars of day to vertical stars at night; others shut them down around the stem like an umbrella around the ferrule.

THE DAISY

(Chrysanthemum cucanthemum L.)

So popular is the white ox-eye daisy in North Carolina that neither a legislature nor the school children had to express formally the State's choice. The unanimous tribute of a "common consent" award was paid it by the people of the Tar Heel State; and if the whole catalogue of Nature's blossoming children had been ransacked there could not have been found a hardier flower, a more persistent warrior in behalf of its right to exist, or a better loved or worse hated plant, than the ox-eye daisy. Flowering from May to November, it has adjusted its economy to the necessities of its perpetuation in a way admirable to the student of flower resources and baffling to the good farmer who so heartily dislikes to have his field dressed in the full regalia of poor farming (see page 512).

To the daisy a home in the woods is like an East Side tenement to one who has lived on Fifth avenue. It can never content itself in the shade and the solitude of the forest. The meadow, the pasture, the hay field, the roadside—these are places where it likes to grow; and if it is to grow there it must be well prepared to fight a battle with the farmer. It must be able to set some seed before haying time, else how could it continue its hold in the hay field? Then, too, it must vary its period of blooming, for what farmer who prides himself on well-kept pastures would permit daisies to crowd out his clover if they could be overcome in a single mowing?

Prolific beyond words is this enterprising blossom. It multiplies by wholesale and covers the green turf of April with a flowery snow in June. Ten thousand thousand city folk go out and gather and admire, but ten thousand thousand farmer folk, knowing that it means poor quality and less quantity in hay and pasture, cannot understand the urban enthusiasm for a blossom that lowers production and increases the cost of living.

But with all its "weedy rôle" in the eyes of the farmer, there is beauty in the field daisy and as much sentiment. What maiden has not on its "petals" told her fortune with the formula, "He loves me, he loves me not," or has failed to find a blossom that would declare to her that her Prince Charming's heart was at her feet?

But whether it be with the eyes of the farmer that you see the daisy, beholding only its persistent invasion of his domains, or whether with the eye of the beauty lover who is called by admiration and not to battle, or whether with the eye of the sentimental who love it for the fortunes it has told, the daisy is by all awarded the honor of being an alien that has no hyphen in its disposition. It is an immigrant, unlike its closest relative, the black-eyed susan; but it has all the enterprise, all the spirit of winning its way in the world, all the Yankee resourcefulness of a flower to the manner born. It long ago found Europe too crowded for comfort and discovered that it could come to America as a stowaway. Over here it traveled on the wind, in wagons, by river steamboats, on railroad trains, any way that offered it the chance to find a new field in which to lay the foundations of a new colony.

The daisy's prosperity is due no less to the form of its bloom than to the tactics it employs in fighting for its position in the field. The white "petals" are not petals at all; they are sterile florets, gaily bedecked in white, waving a welcome to the passing bees and butterflies, whom they invite to the feast which the yellow florets have prepared for them. Like all other progressive flowers, the daisy has designed ways to insure itself the boon of cross-fertilization. The two arms of the pistil are kept tightly closed until the pollen is gone; then they open up and become sticky, so that the bee which comes their way from another blossom must leave with them some of the grains of pollen it has gathered elsewhere.

THE SEGO LILY

(**Calochortus nuttallii** Torr. and Gr.)

Utah's floral queen belongs to the tulip branch of the lily family. It has a remarkable list of relatives, good, bad, and indifferent, close and distant. These kinsfolk range from the evil-smelling carrion flower to the delightfully fragrant lily-of-the-valley; from the gorgeous and assertive butterfly tulip to the timid, unassuming fairy bell; from the poisonous sego and the hog potato to the edible comass and the soap-like amole (see page 512).

The sego lily is a variety of the mariposa tulip. Its flower is about two inches across, and its white petals are tinged sometimes with yellowish green and sometimes with lilac. The flowers usually follow individual taste in colorings and wear a wide range of the prettiest gowns imaginable.

Mariposa in Spanish means butterfly, and the members of the mariposa group of flowers, to which the sego lily belongs, are marvelous in their hues and delightful in their imitation of the decorative patterns and color combinations of their insect friends.

A visitor to the big trees of the Mariposa Grove relates how she found a bed of sego lilies in which, upon close examination, she discovered fourteen distinct markings, the flowers resembling so many butterflies with wings outspread for flight, their rich color glistening in the sun.

The sego lily was even more to the early Mormon church in Utah than was the mayflower to the Pilgrims at Plymouth. The mayflower was the springtime's first harbinger and a blossom of hope; the sego lily was not only early on the scene to gladden a somewhat dreary landscape, but its roots proved edible. The followers of Brigham Young looked upon it in somewhat the same light as the Jews looked upon the manna that saved them during their wanderings in the wilderness. Therefore the sego lily has figured largely in the history of the Mormon Church in Utah and has been accorded the distinction of State flower as a proof of the early settlers' gratitude.

THE SAHUARO

(**Carnegiea gigantea** [formerly known as **Cereus giganteus**] (Engelm.) Britton and Rose)

When the legislature of Arizona selected the column cactus, known to laymen as the sahuaro, as the State flower, it chose a representative which for tenacity and ability to live under stressful conditions is unsurpassed. The sahuaro grows so as sometimes to resemble an upstanding Brobdingnagian cucumber and at others to look like a huge green candelabra. It thrives on the mountain slopes where other plants cannot survive the shortage of moisture, rearing its thick, cylindrical branches straight up into the air as high as 40 feet. These are armed with rows of spines arranged in star shapes, and in May and June bear exquisite whitish, waxlike flowers, perfect in form and opening in the daytime (see page 513).

We always think it wise to save for a "rainy" day; but paradoxical as it may sound, the "rainy" day of the cactus is the day when it fails to rain for a long time. So it has arranged its household economy for "making hay" while the rain falls. In wet weather it converts itself into a sort of green-hued sponge, drinking up great stores of water. It long ago suppressed the last vestige of a leaf, and in lieu thereof has covered itself with a thick, hard, impervious coating which sometimes has a grayish bloom on the surface. In other species the coating is covered by a mass of thick hairs. In this way it is able to prevent evaporation of its moisture under the fiercest sun and calmly to await new supplies. It is indeed the vegetable counterpart of the camel.

We think of the cacti as unfriendly, yet the birds often find them a refuge. Woodpeckers make holes in the sahuaro for their nesting places. Other small birds of the arid regions move in when the woodpeckers move out. One of these is a small owl, said to be the tiniest of all members of the owl tribe. Another feathered friend of the cacti is the cactus wren, a little songster with a grayish brown back, a darker head, a spotted breast, and a white line over the eye. It builds a large, flask-shaped nest of grasses and twigs which it lines with feathers. The nest is entered by a covered way or neck several inches long.

The column cactus, like most of its relatives, is a prolific producer of seeds. Millions reach the ground, thousands may germinate, but only now and then does one escape the perils of childhood and become a full-grown cactus. In their youthful days the sahuaros are odd, round plants only a few inches high and with the spines, which protect them from animal depredations, undeveloped. The fruits of this species have a crimson flesh and black seeds, reminding one in those respects of the Georgia watermelon. The Papago Indians eat both the meat and the seeds.

THE CACTUS

(**Echinocereus fendleri** (Engelm.) Ruempl.)

In choosing the cactus as New Mexico's flower favorite the school children of that State honored a family of plants which are almost exclusively Americans. If a few species that originated in Africa be excepted, the cacti are limited to America.

The *Echinocereus fendleri* is but one of many of the types of cacti to be found on New Mexico's broad mesas and desert valleys. Looking like a cross between a pineapple, a cucumber, and a green pepper, and crowned with a brilliant flower whose red petals, yellowish stamens, and green pistil make a color symphony, this species is always a favorite. It is a sort of vegetable porcupine, ready to give every comer a reception that will not soon be forgotten. Many an admirer, seeing it for the first time, has plucked a blossom to his sorrow, for the tiny hairy thorns stick to the fingers in a most irritating fashion.

The cacti are one of the most interesting family of plants, containing many remarkable species. There is the barrel cactus, or visnaga, which often comes to the traveler's rescue in the desert. The barrel cactus acts as a cistern, collecting within itself reservoirs of water, which the traveler in the desert may tap. Then there is the coccus cacti, which is cultivated in Mexico and Central America as food for the cochineal insect, from which dyes for making carmine and scarlet are derived. The spines of another cactus are used as tooth-picks by the American Indians. Then there are the opuntias, which include the prickly pear or Indian fig cactus. Several species are cultivated in southern Europe and northern Africa for their sweet, juicy fruit.

THE MISTLETOE

(**Phoradendron flavescens,** Pursh, Nutt)

The mistletoe is the only one of the State flowers so far adopted that is parasitic in its habits. And yet, parasite or no parasite, there is no blossom in the catalogue that has more of romance clinging to it than this, Oklahoma's representative in the galaxy of emblematic flowers (see page 514).

Mistletoe figured in the superstitious rites of the British Druids and in the Nature myths of the Scandinavians. Balder, son of Odin, husband of Nanna, and the darling of all the gods, was so fair that light streamed from him and the whitest flower that blew was likened to him. Once he had a dream of an impending disaster, which caused his mother to put all things, animate and inanimate, under a vow not to harm him. But she omitted one object—the mistletoe. Loki, his enemy, discovers this omission and induces Balder's brother to shoot at him in play with an arrow of mistletoe. It hits the mark and Balder, god of light, dies, becoming thereafter the emblem of purity and innocence.

The mistletoe was then presented to the goddess of love, and it was ordained that whoever passed beneath it should receive a kiss as a token that it was an emblem of love and not of vengeance. The modern Yuletide custom—perhaps more talked about than observed—of kissing the pretty girl under the mistletoe is a survival of those days.

There are more than 400 species of mistletoe, most of them tropical and most of them parasitic. In the United States there are many varieties and they range far and wide, from the New Jersey coast west and south.

If you ask the Oklahoman about the mistletoe as a parasite, he is likely to answer that if man, tapping the maple for sugar, extracting the sap of the rubber tree for automobile tires, and taking the pine tree's turpentine, is a parasite, then the mistletoe may be called one, too; but that otherwise it deserves to be absolved. It has as much right to get its food from trees, he maintains, as we have to eat beef and mutton or wear woolen clothes or silks and satins.

Of all plants the mistletoe has fewest breathing pores in its leaves—only 200 to the square inch, while the lilac has 200,000. The leaves are almost nerveless, thick, and fleshy. When the seeds put out roots, they always turn toward the branch, no matter whether on the upper or the lower side of it.

Traveling through the South, one may see thousands of trees literally festooned with mistletoe, now growing like witches' brooms, now in graceful array, but always calmly appropriating for its own development the life blood of the tree upon which it feeds.

THE PASQUE FLOWER

(**Pulsatilla patens,** L., Mill)

Inhabiting dry soil and prairie lands, blossoming through March and April, ranging from Illinois to the Rocky Mountains and from Canada to Texas, the pasque flower, elected queen of flowerland by the legislature of South Dakota, need never fear to stand in any flower company, however distinguished, however beautiful, however charming (see page 514).

As a member of the crowfoot family, the pasque flower has some lovely cousins. For instance, there is the Virgin's bower or clematis, the wood anemone, the buttercup, the larkspur, the monkshood, the columbine, the goldthread, and the baneberries. Its immediate relatives are the anemones, among which it is one of the prettiest.

With the first warm sunshine of spring the pasque flower begins to lend its soft purplish hues to the landscape. Its leaves are so furry, the result of its unconscious efforts to protect itself from pilfering ants and other creeping insects, that the children of South Dakota have come to call it the "gosling plant." If its lovely flowers gladden the hills while ungenial winter wanes, its fruiting period also has beauty to offer. A head of silky seedlets with their dainty plumes leads many people to call it the ground clematis.

The stalk of the anemone lengthens considerably after the plant flowers. Those familiar with the garden varieties have noticed how it grows longer even after it has been cut. If the stems be put in water, they readily double their length. This power of cell-making, with only air, light, and water out of which to manufacture tissue, seems a wonderful gift. Devoid of roots and possessed only of local energy, it is hard to understand how the stalk continues to grow. It has been suggested that the duty of raising the seed capsule to the required height may be one that the roots have delegated to another part, just as the brain of man has delegated to the nerve ganglions the duty of shutting the eyes when they are threatened, or of causing the body to jump at a sudden noise.

The pasque flower of South Dakota is a speaking likeness of an English variety, if indeed it is not the direct descendant of that flower. There is a tradition that the plant first arose out of the blood of the Danes who were killed on the field of battle in the stormy days of Britain's early history, and many people call it the "Danesblood." Opinions differ as to how it came by its name of pasque flower. Some say that before the Gregorian revision of the calendar it was the most abundant flower at Eastertide; hence its name. Others declare that a dye for coloring Easter eggs was obtained from it. Be that as it may, the pasque flower itself brings delight to the prairies even before the last winter winds have roared their farewell.

THE OREGON GRAPE

(**Berberis aquifolium** Pursh)

The Oregon grape is one of the State flowers which has the prestige of legal status behind its queenship. It belongs to the barberry family, other members of which are the twin-leaf, the blue cohosh, and the May apple. Between its dainty blossoms of early summer and its bright purple berries of late fall, it wins admiration wherever it grows. It lives close to the ground and is not a climber like the ordinary American wild grape. But no fruit of field or forest ever made a more delicious jelly than that of this handsome shrub of the West. Though the berries resemble the huckleberry, the foliage looks like that of the holly, and the wood inclines to a yellow-cast red. Its range is wide, extending as far east as Nebraska, as far south as Arizona, and as far north as British Columbia (see page 515).

It is one of the strange things about nature that so many of its creatures are unable to perpetuate their species without a periodic change of environment. For instance, the germ of yellow fever dies and disappears where it cannot spend part of its time in the human body and part in the stomach of a stegomyia mosquito. Likewise, cedar rust becomes extinct if it cannot live one year on an apple tree and the next on a cedar tree. In the case of one species of wheat rust the barberry is necessary to its continued hold on life. This rust cannot live without changing hosts periodically.

But the Oregon grape is wiser than some of its immediate kinsfolk. It has a preference for situations where the communication of rust spores to it from wheat and from it to wheat is not quite so readily accomplished. It is found most abundant and beautiful on the foothills and mountain slopes deep in Oregon's lumber lands.

THE INDIAN PAINTBRUSH

(**Castilleja linariaefolia** Benth.)

Some years ago the school children of Wyoming, feeling that their State ought to have a duly chosen queen of the flowers, undertook to elect one. They chose the dainty and universally admired fringed gentian. But while no flower is more beautiful, many people in Wyoming thought there were others more representative and typical of their State. This feeling culminated in legislative action in 1917, with the result that beautiful Queen Gentian had to abandon her throne to the narrow-leaved Indian paintbrush (see page 515).

The paintbrush belongs to the figwort family, which includes a great host of beauties. Some of its cousins are the mullens, the toadflaxes, the snap-dragons, the turtle-heads, the beard-tongues, the monkey flowers, the speedwells, the foxgloves, and the eye-brights. Closest of kin are the painted cups, an attractive group of posies.

Most of the Castilleja tribe are inclined to be parasitic in their habits. Instead of sending out rootlets themselves in order to absorb the plant food and moisture that Nature provides, some of them send their roots down into those of other plants and feast all summer long. Like the lily, they toil not, neither do they spin; but if Solomon was ever in all his glory arrayed as they are, that fact was overlooked by the historians of his day.

Wyoming's flower, while not possessed of the deep hue characteristic of the Castilleja tribe—declared by one of our leading botanists to be "the brightest spot of red the wild palette can show"—makes up in delicacy what it lacks in intensity. The blossom is light red, with touches of soft yellow and hints of salmon pink.

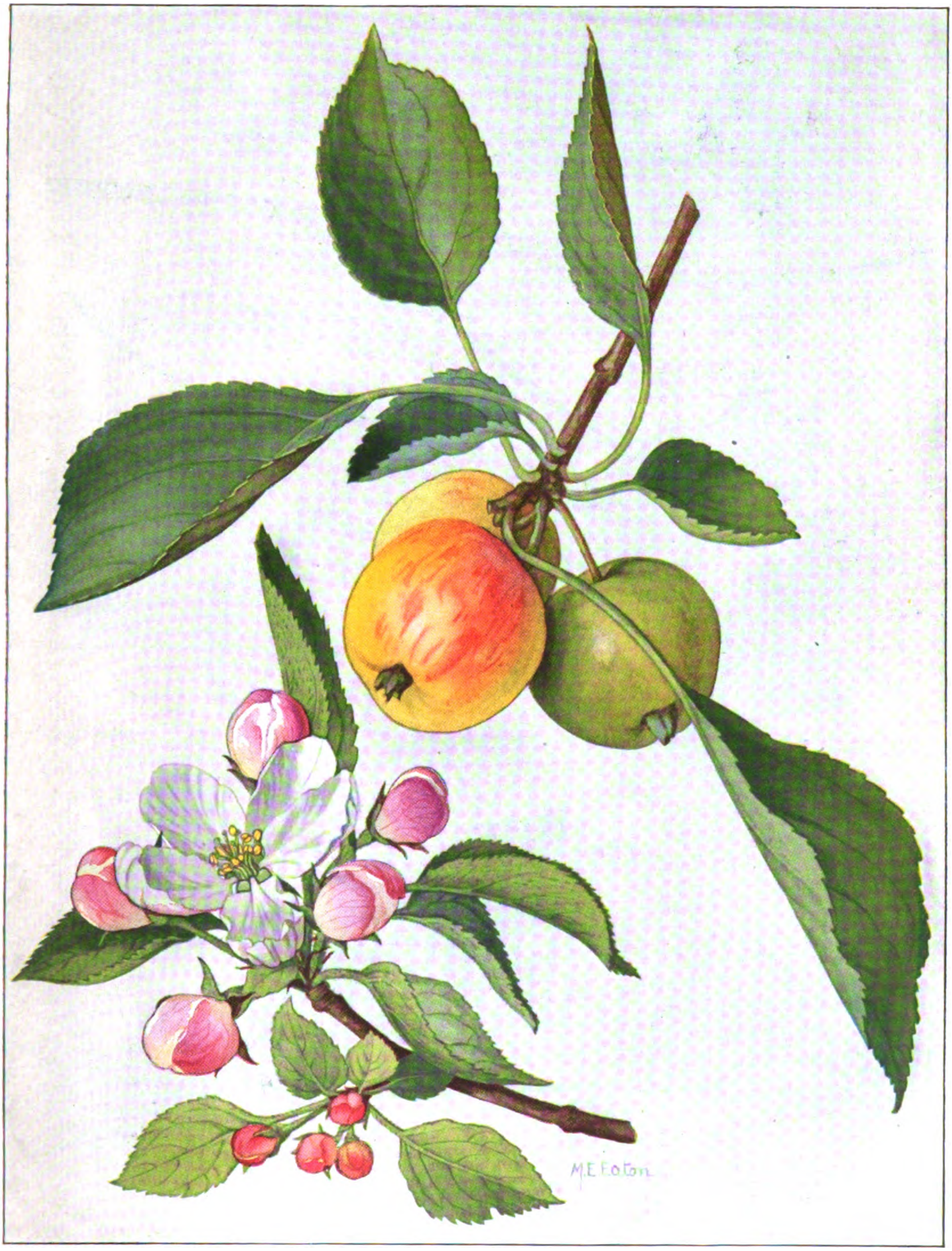
No traveler in the Rocky Mountains, the High Sierras, or the sagebrush regions of the Great Basin can forget the paintbrushes. Where they dwell among the blue lupines, the yellow mimulus, and other bright blossoms, they perfect a combination of hues that transforms the veriest riot of color into an orderly aggregation of polychromatic beauty.

RHODODENDRON

(**Rhododendron maximum** Michx.)

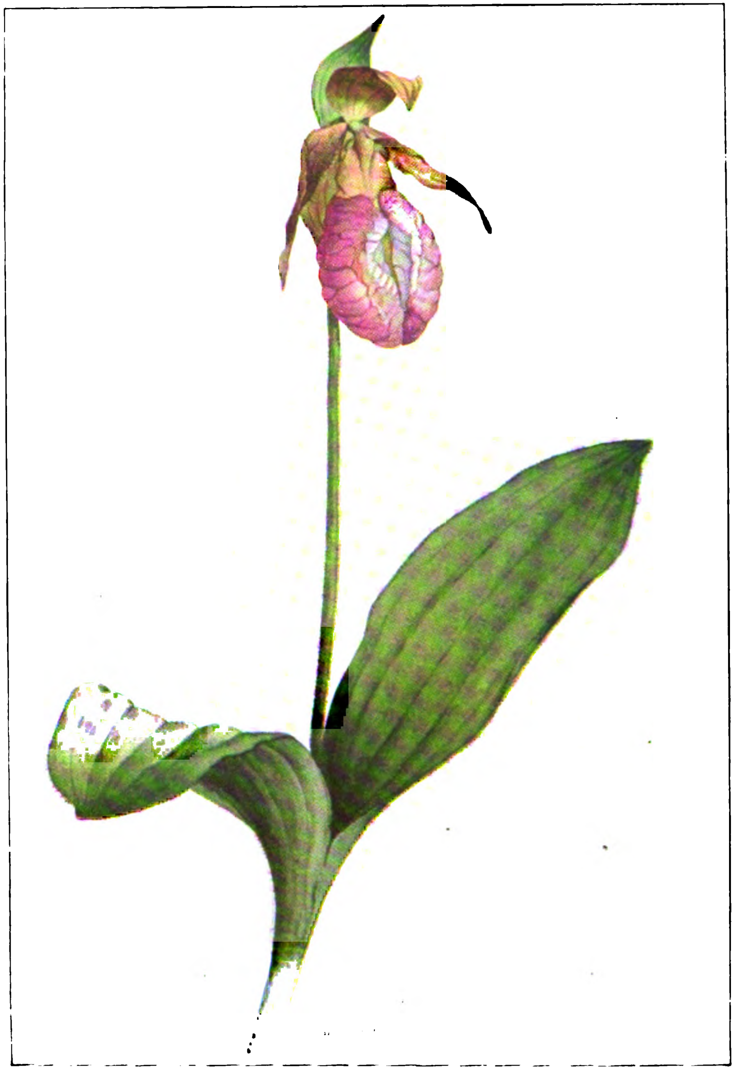
The superb beauty of the rhododendron has won for it universal admiration and the distinction of being the flower of two States. The legislature of West Virginia and the State organization of women's clubs in Washington have elevated it above all other floral rivals in their communities. The chosen variety of West Virginia is *Rhododendron maximum,* while that of Washington is *Rhododendron californicum,* also called the California rose bay. The latter is the most splendid of western shrubs. Both kinds are of the heath family, cousins of the mountain laurel, and have delicate, waxen blossoms tinted like the "rosy-fingered dawn," with upper petals flecked with golden and greenish spots (see page 516).

A true artist in selecting its background, the rhododendron not only surrounds its exquisite blossoms with smooth, rich green leaves which set them off effectively, but also makes its home commonly on moist, forested mountainsides, where the gloomy greens and browns of dark rocks and lofty trees contrast with its dainty pink and white ruffles.



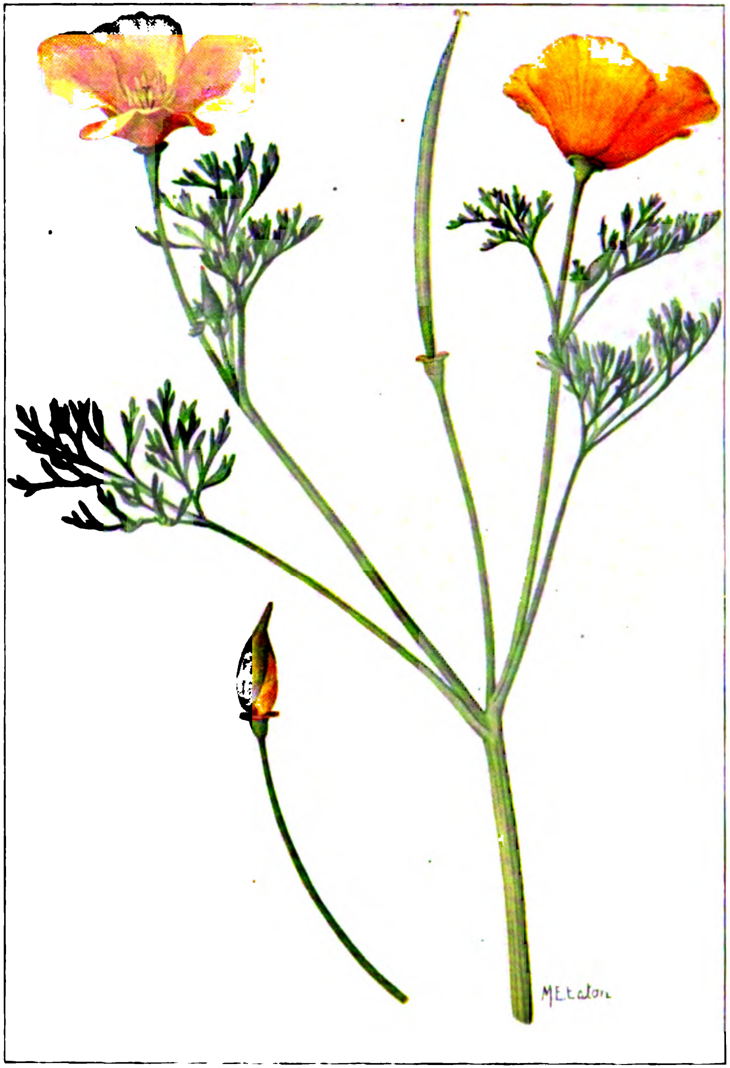
ARKANSAS AND MICHIGAN

APPLE and BLOSSOM
Malus sylvestris Mill.



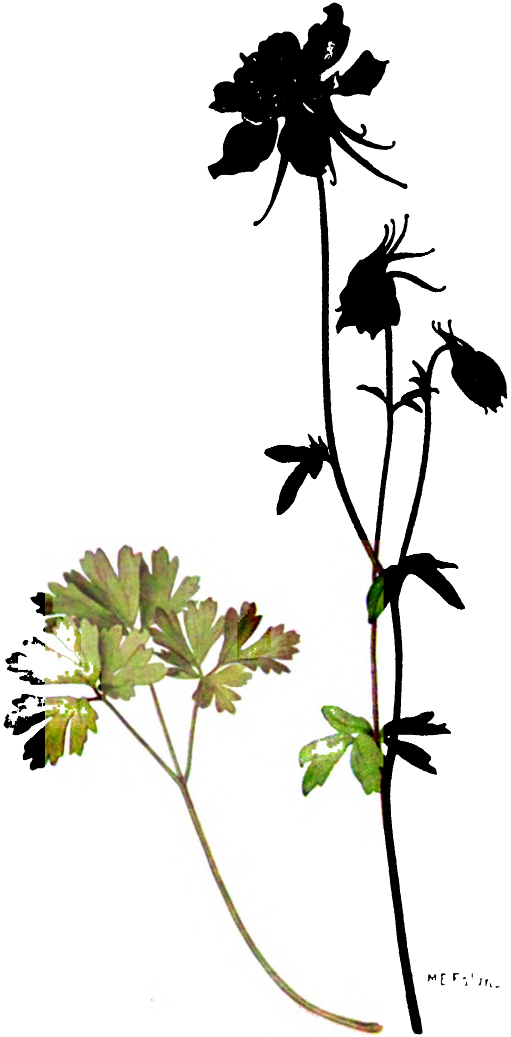
MINNESOTA

PINK MOCCASIN FLOWER
Cypripedium acaule Ait.



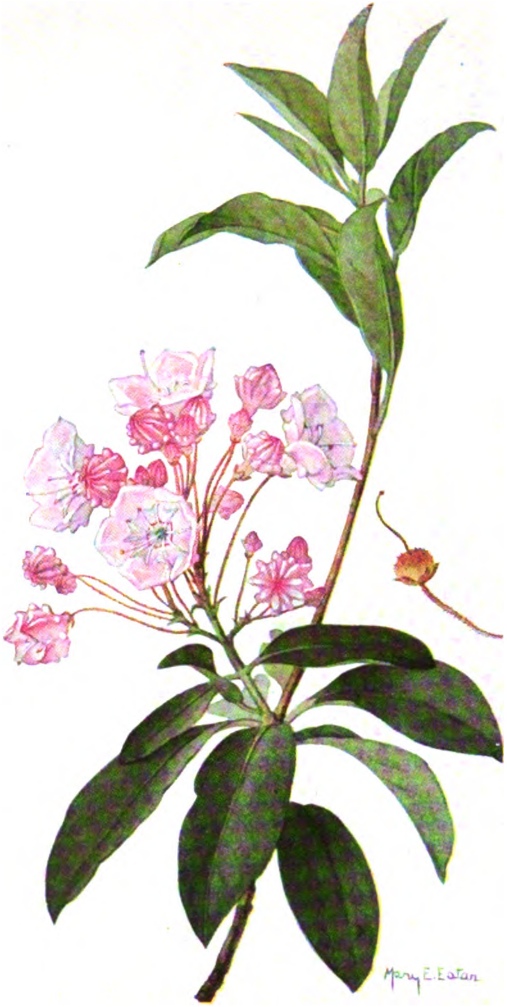
CALIFORNIA

GOLDEN POPPY
Eschscholtzia californica Cham.



Colorado

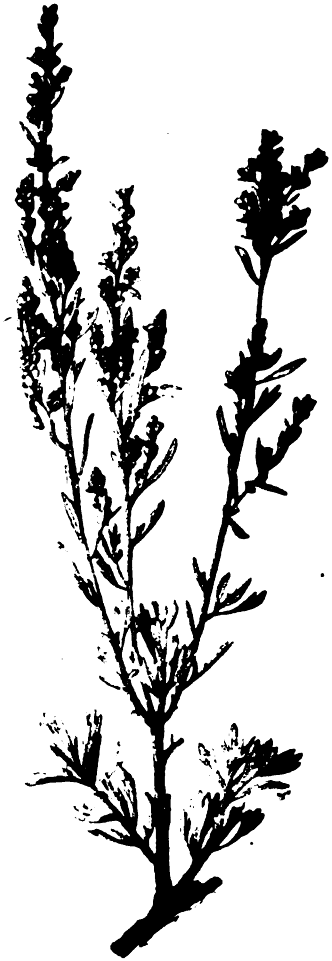
BLUE COLUMBINE
Aquilegia coerulea James



Mary E. Eaton

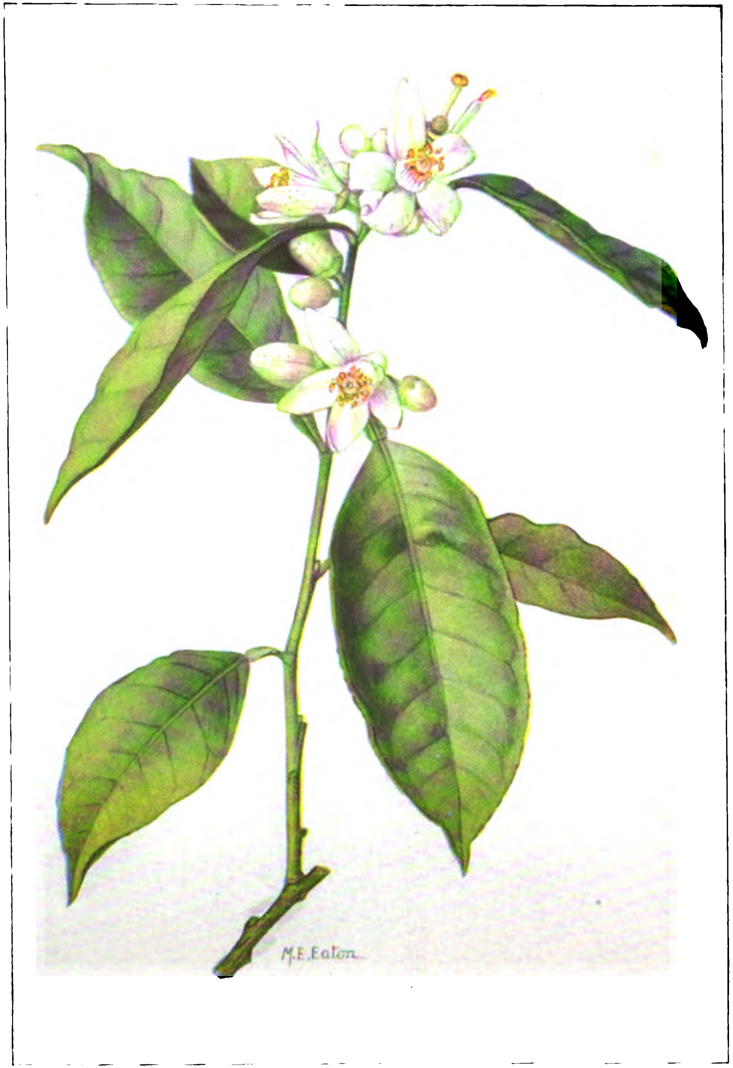
Connecticut

MOUNTAIN LAUREL
Kalmis latifolia L.



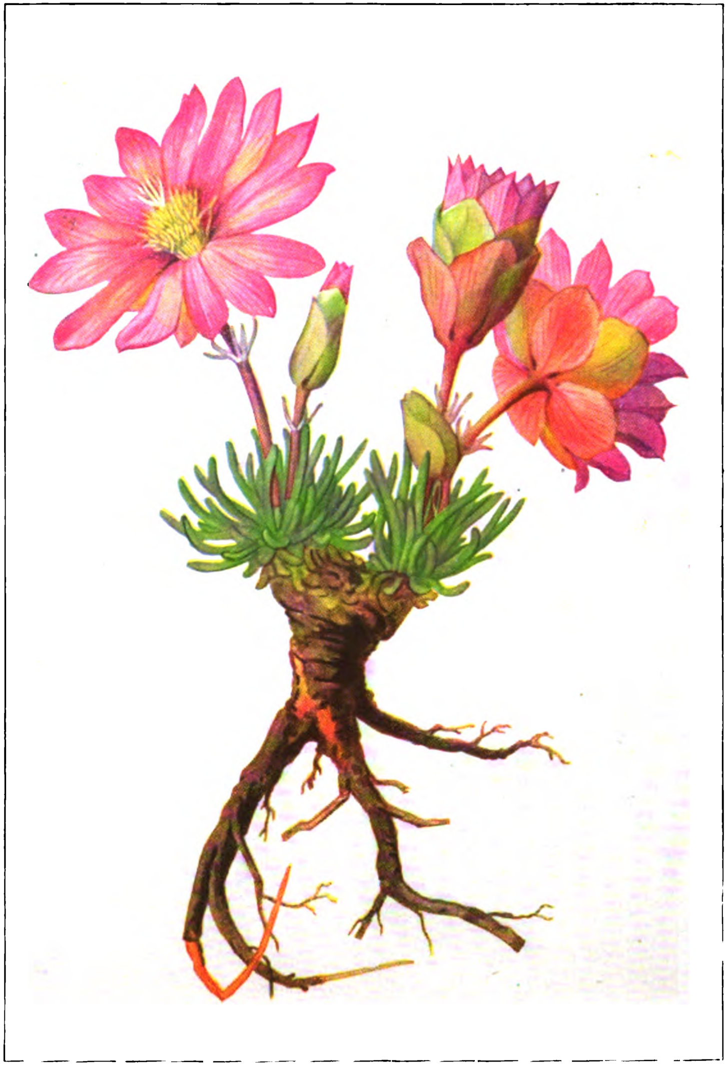
Nevada

SAGEBRUSH
Artemisia tridentata Nutt.



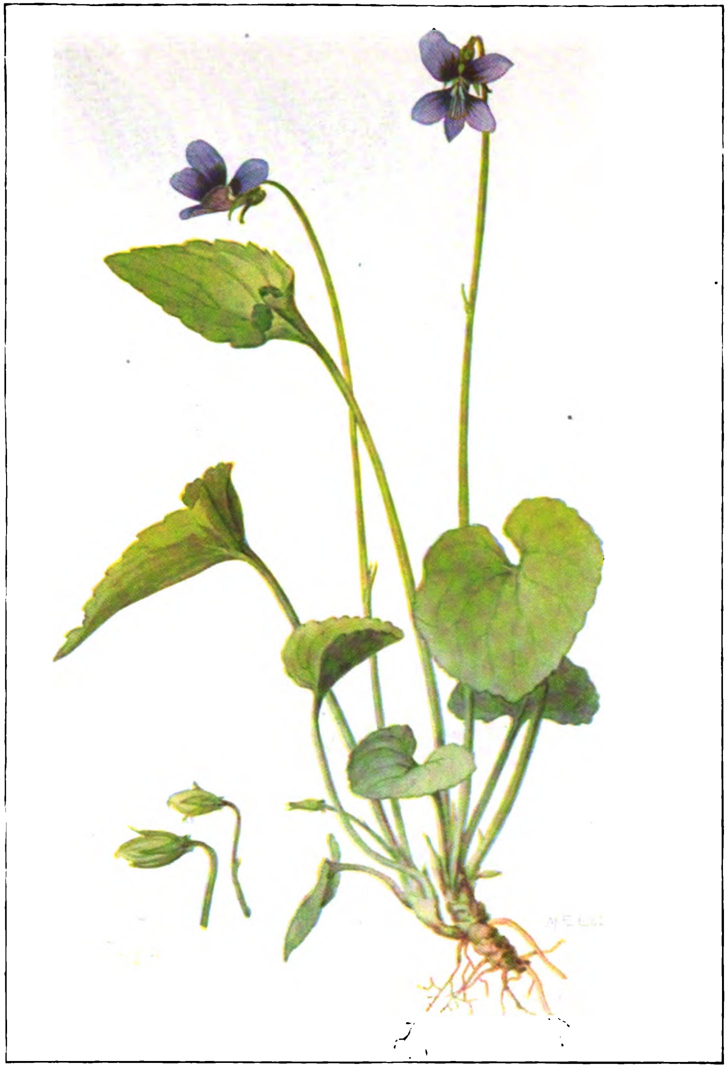
Florida

ORANGE BLOSSOM
Citrus sinensis Osbeck



Montana

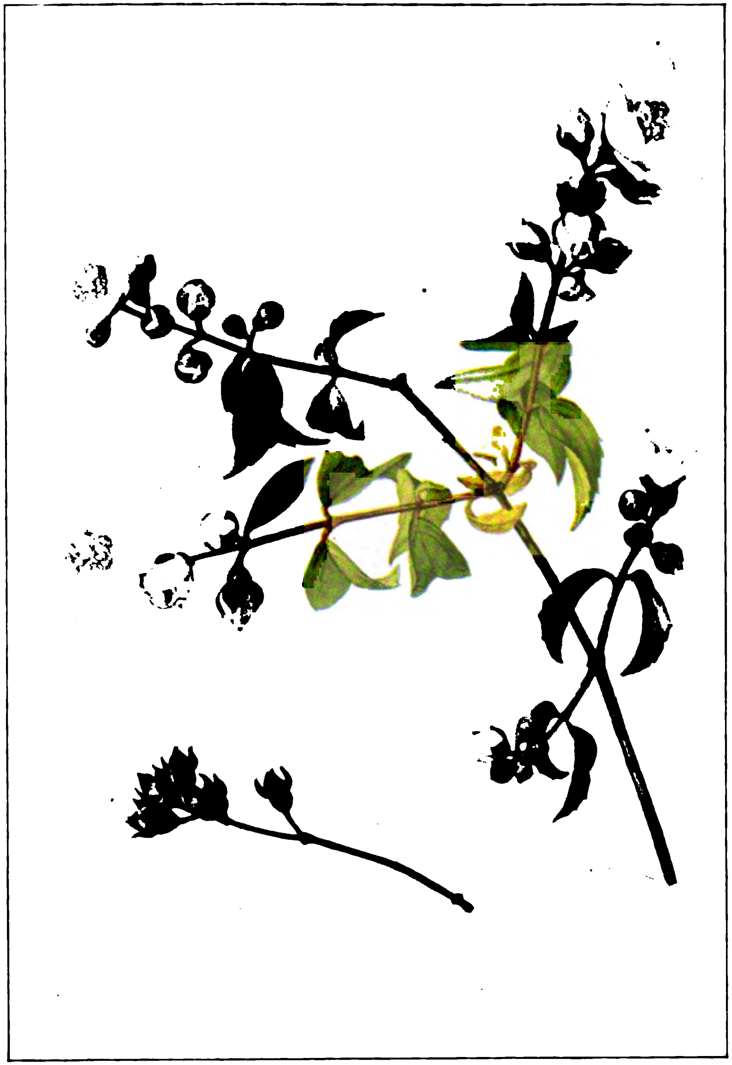
BITTER-ROOT
Lewisia rediviva Pursh



Illinois, Rhode Island and Wisconsin

THE VIOLET

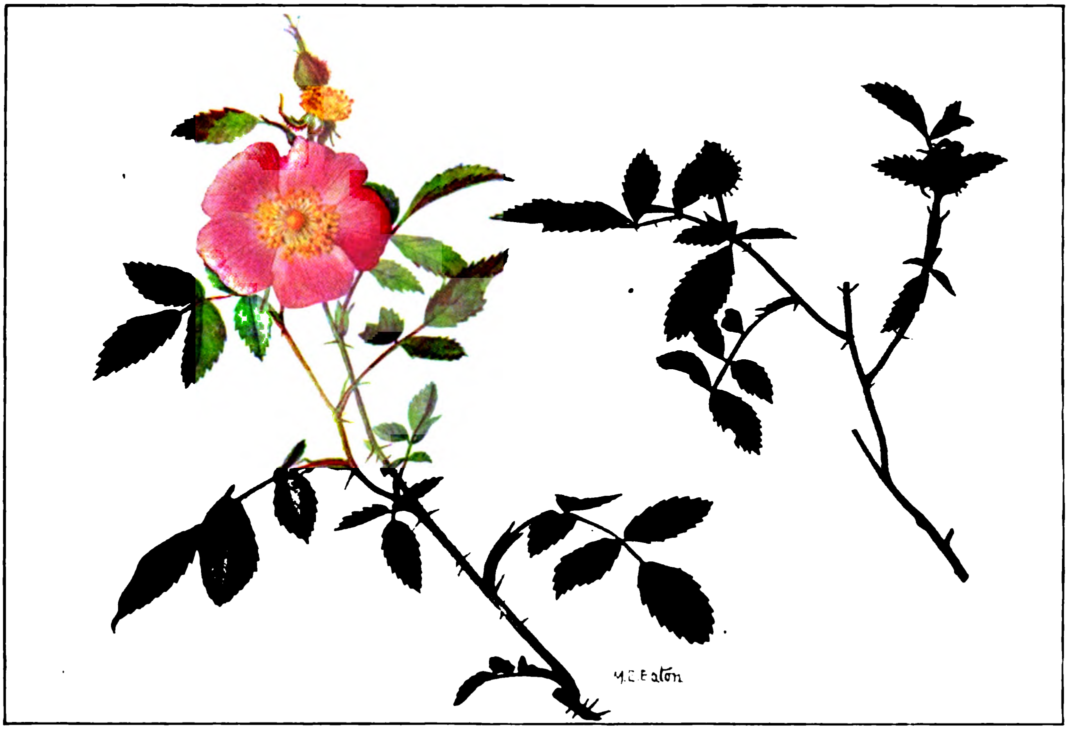
Viola



Idaho

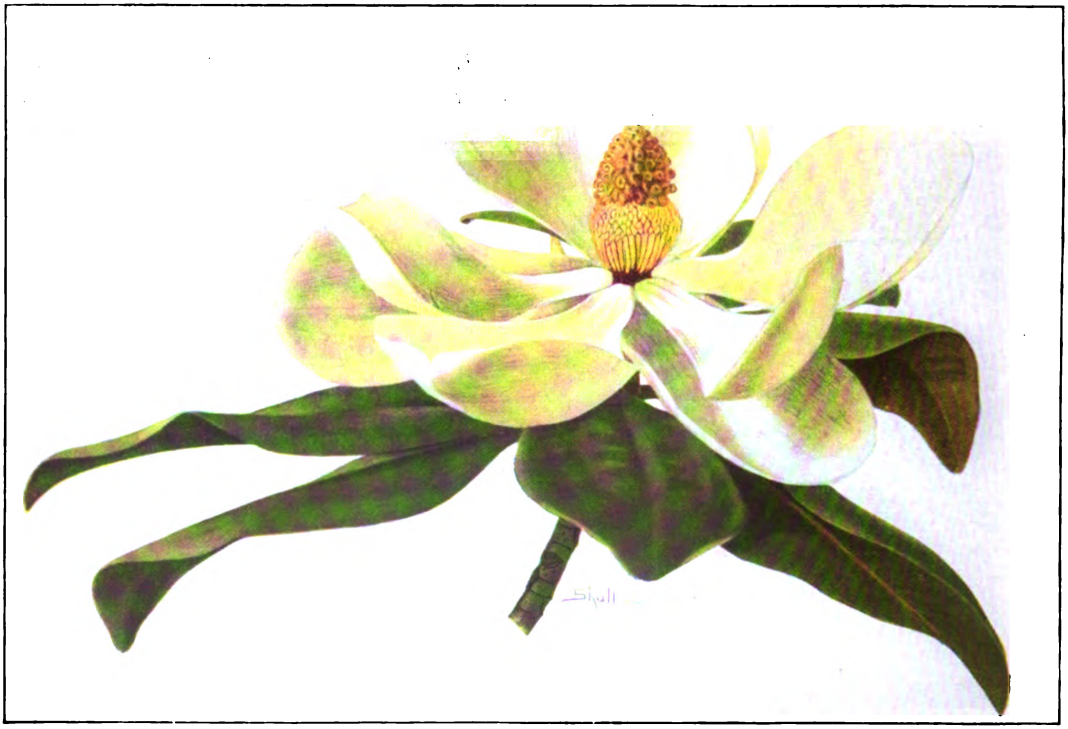
LEWIS' SYRINGA

Philadelphus lewisii Pursh



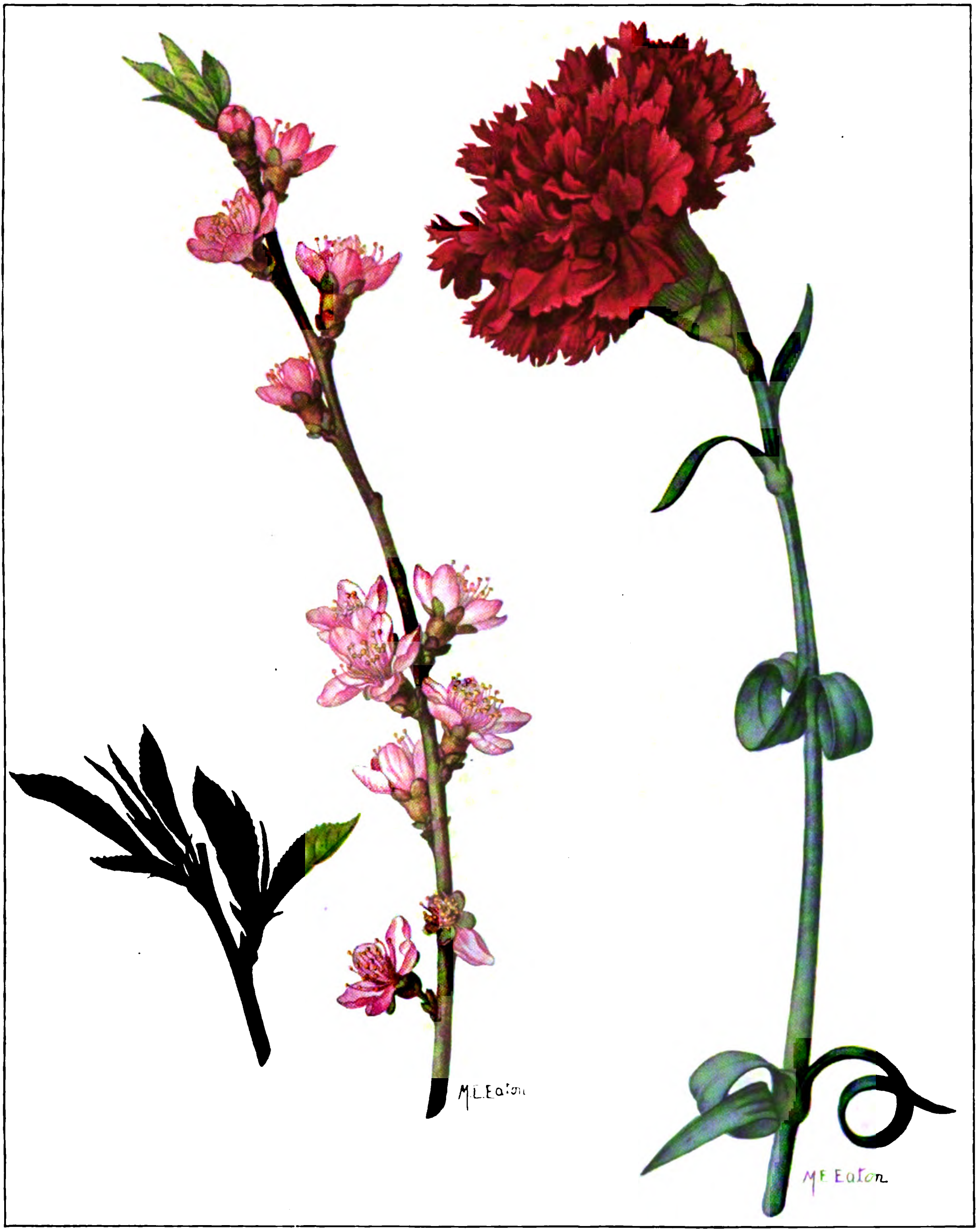
IOWA

LOW or PASTURE ROSE
Rosa carolina L. (*Rosa humilis* Marsh.)



LOUISIANA AND MISSISSIPPI

MAGNOLIA
Magnolia grandiflora L.

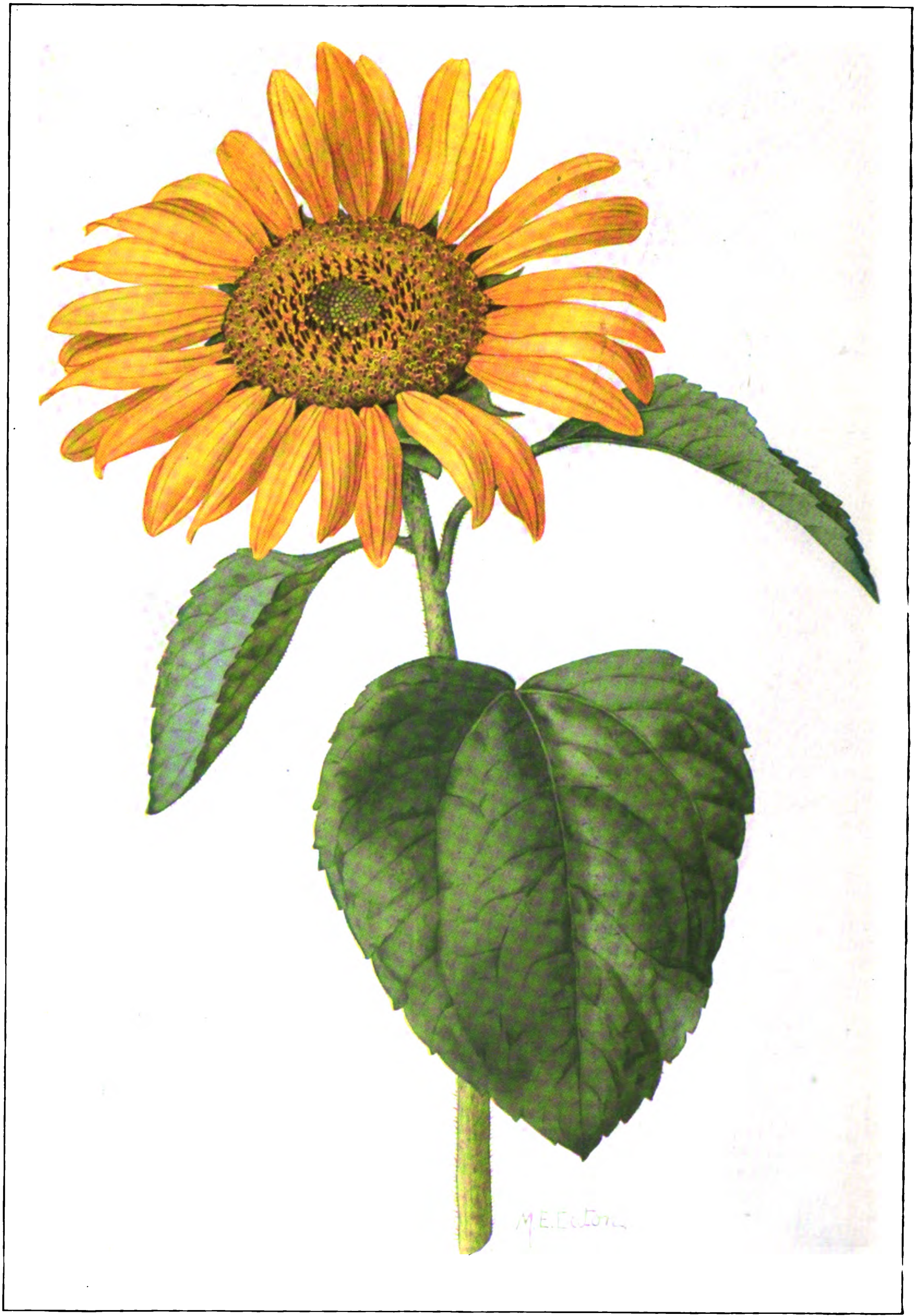

M E Eaton
M E Eaton

Delaware

PEACH BLOSSOM
Amygdalus persica L.

Ohio

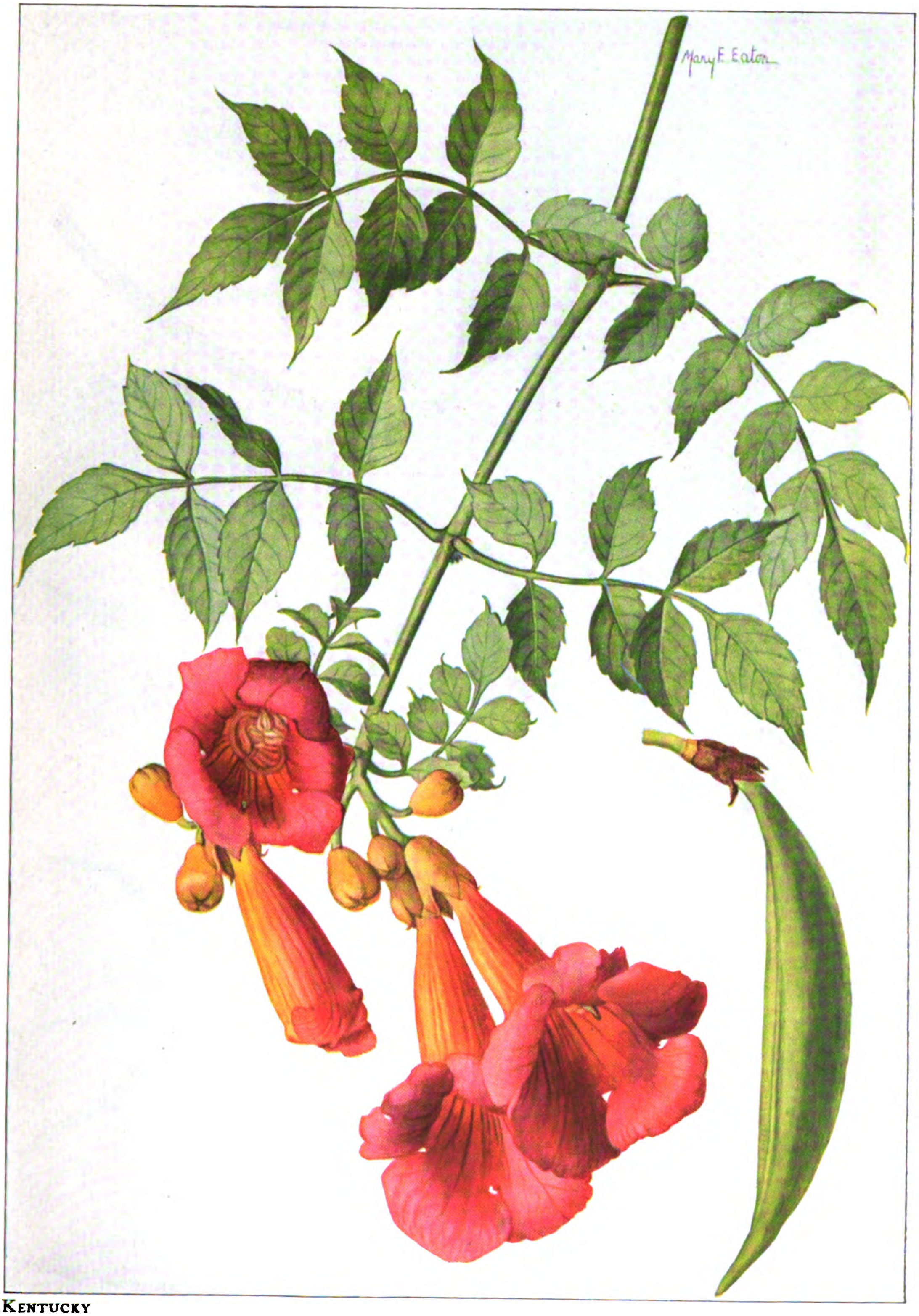
RED CARNATION
Dianthus caryophyllus L.



KANSAS

COMMON SUNFLOWER
Helianthus annuus L.

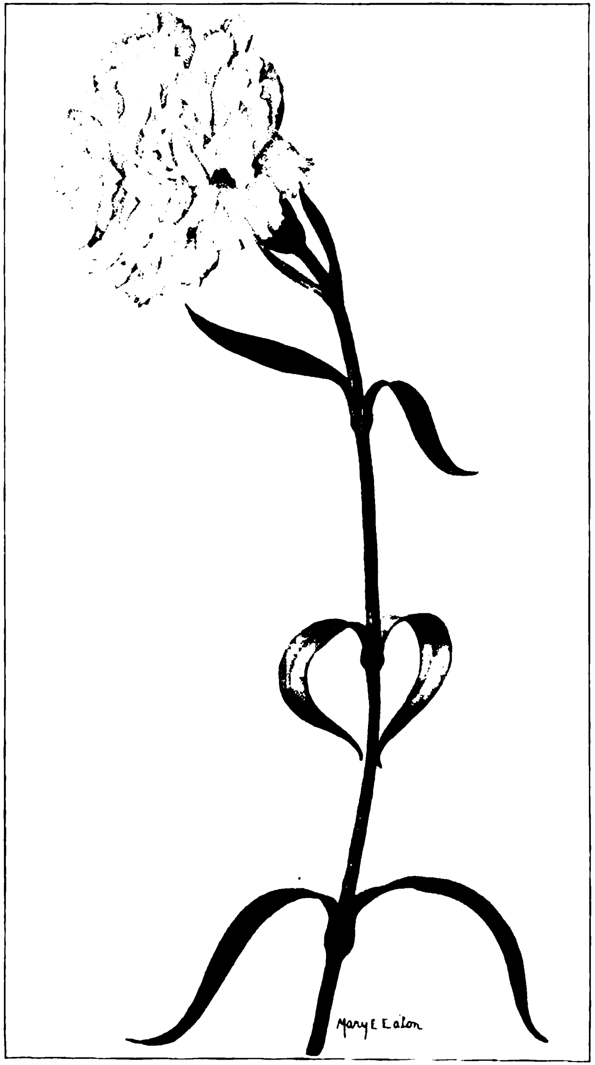
508


Mary E. Eaton

Kentucky

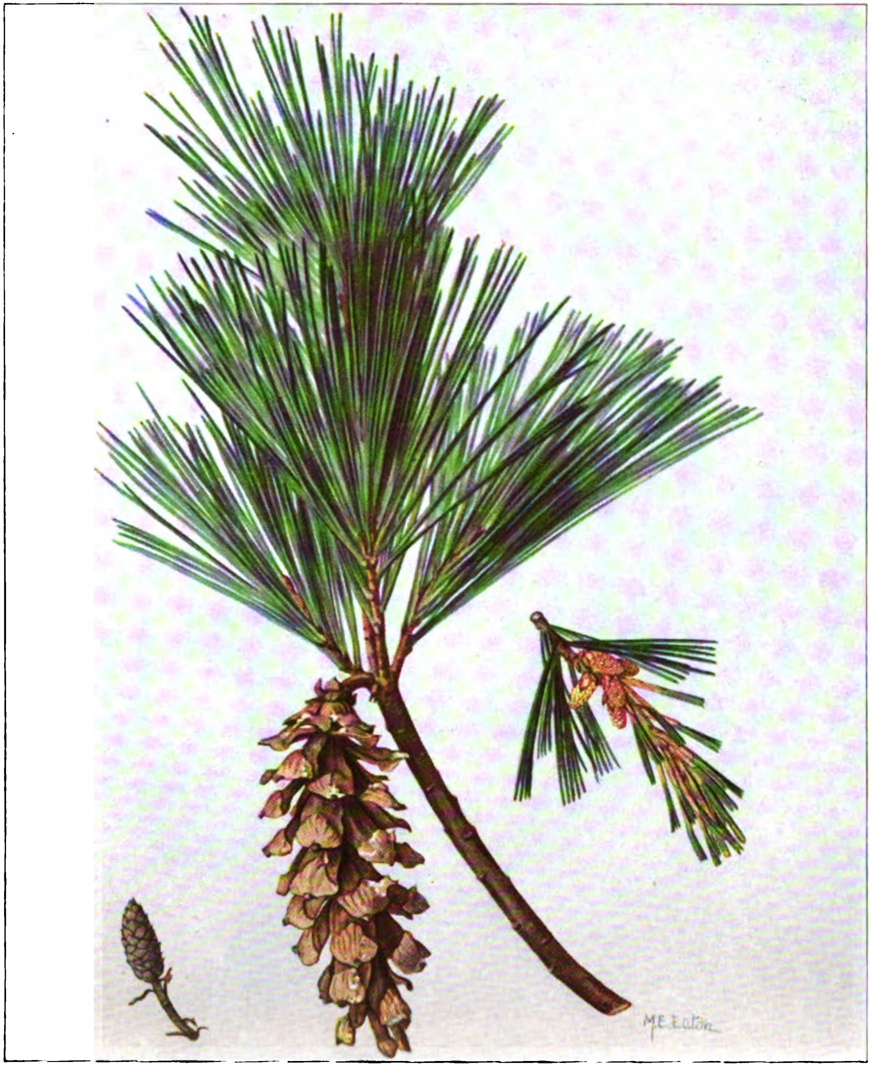
TRUMPET VINE
Bignonia radicans L.

509


Mary E Eaton

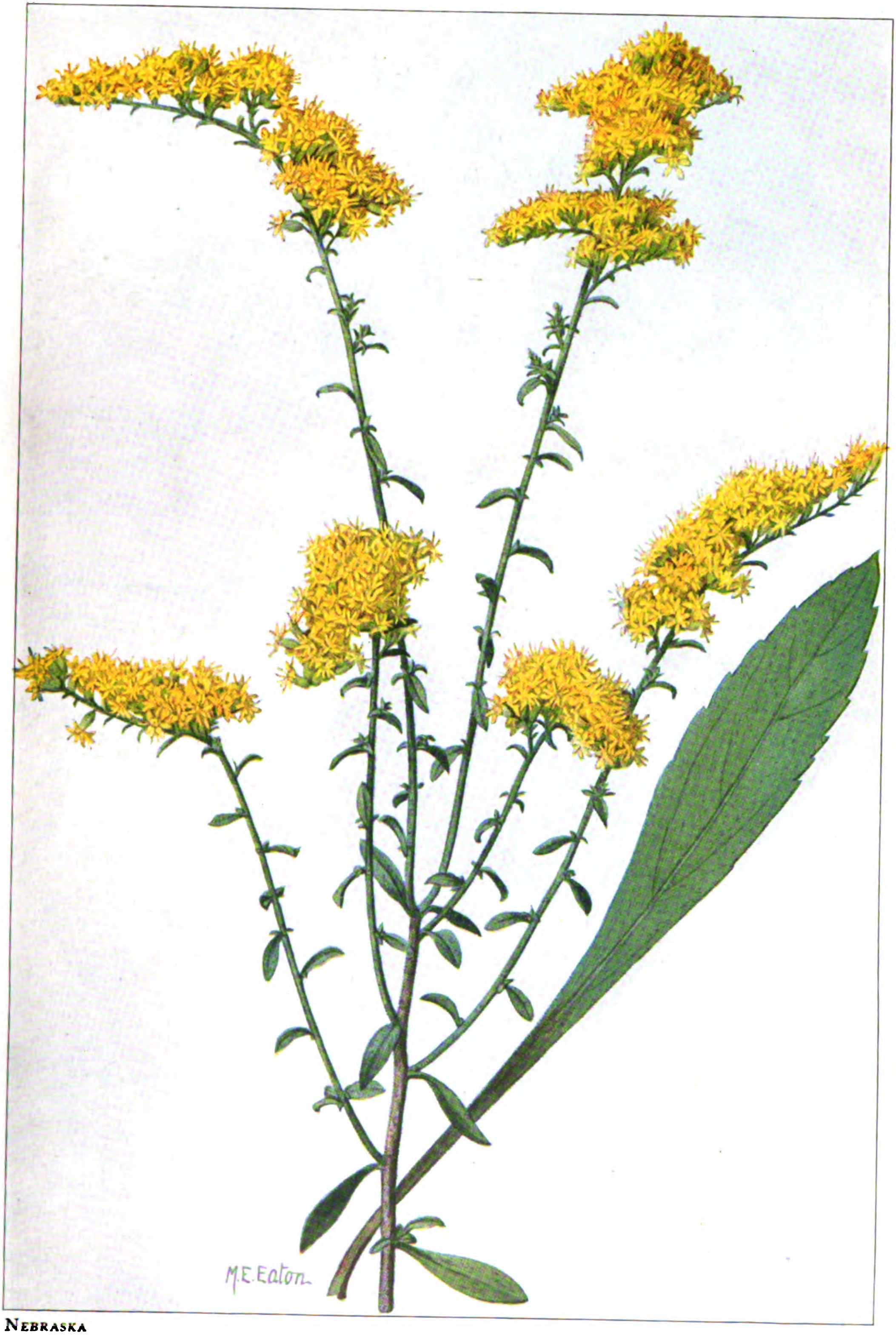
INDIANA

PINK CARNATION
Dianthus caryophyllus L.



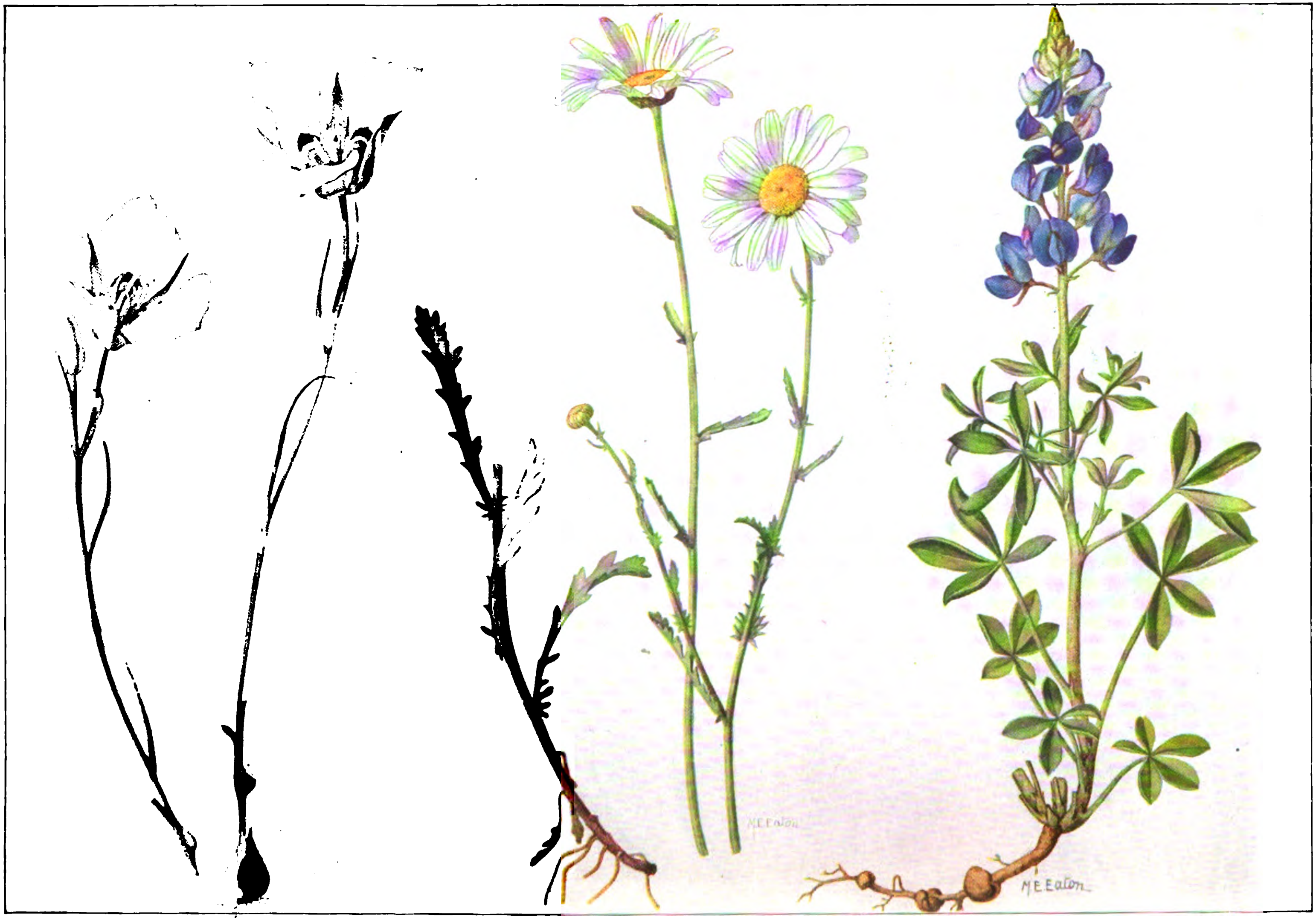
MAINE

WHITE PINE
Pinus strobus L.



Nebraska

FIELD GOLDENROD
Solidago nemoralis Ait.



Utah

SEGO or MARIPOSA LILY

Calochortus nuttallii Torr. & Gr.

North Carolina

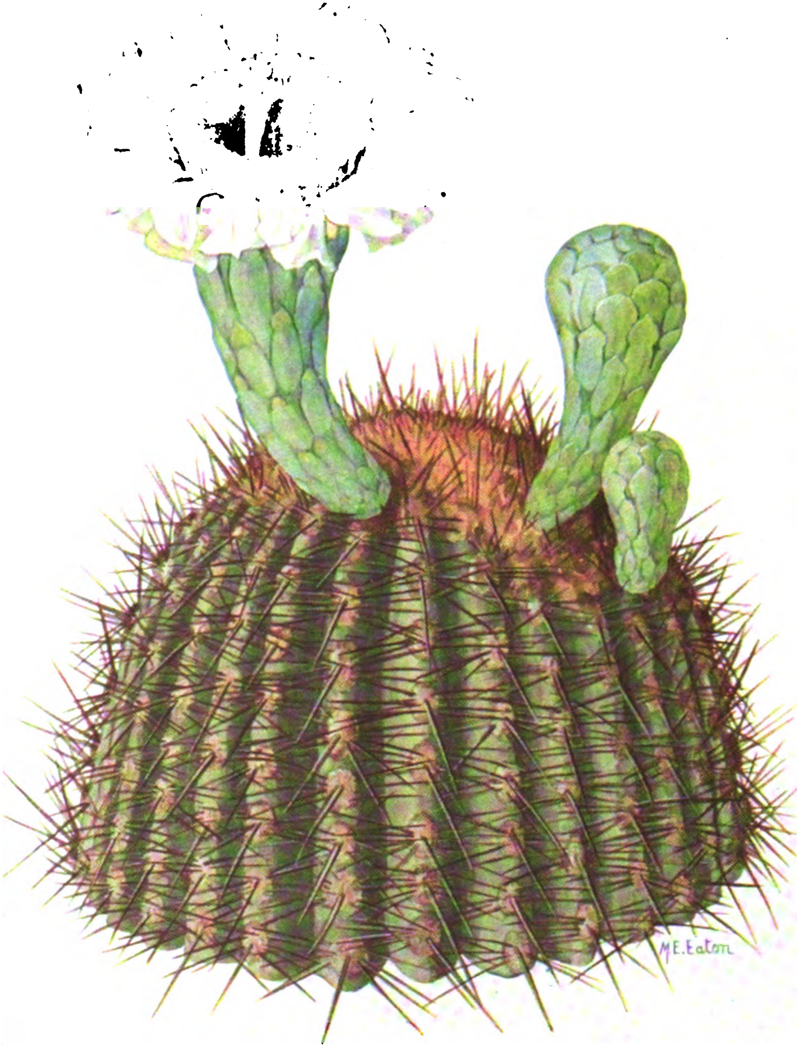
COMMON OR OX-EYE DAISY

Chrysanthemum leucanthemum L.

Texas

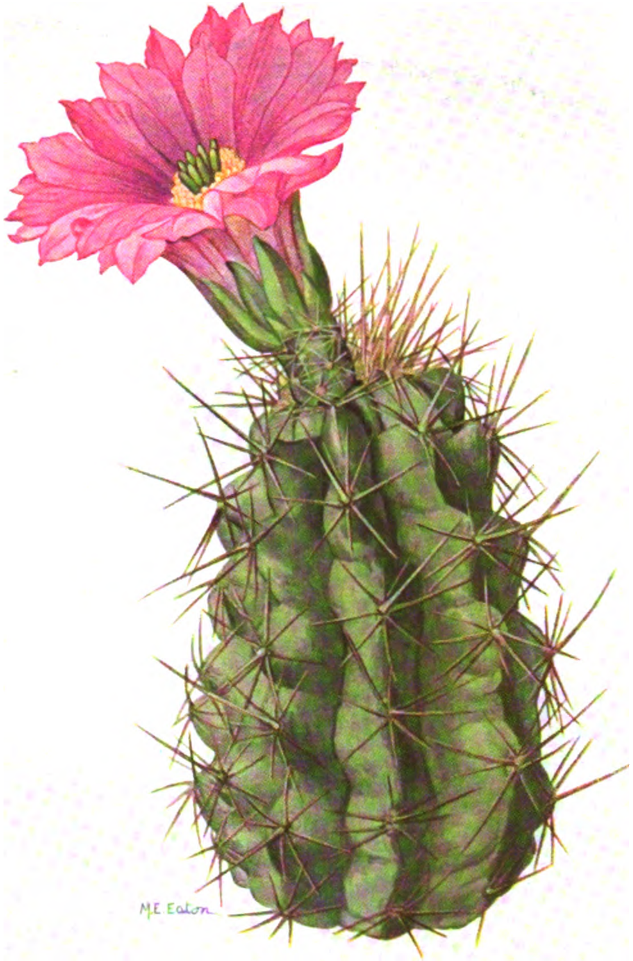
BLUEBONNET

Lupinus texensis Hook.



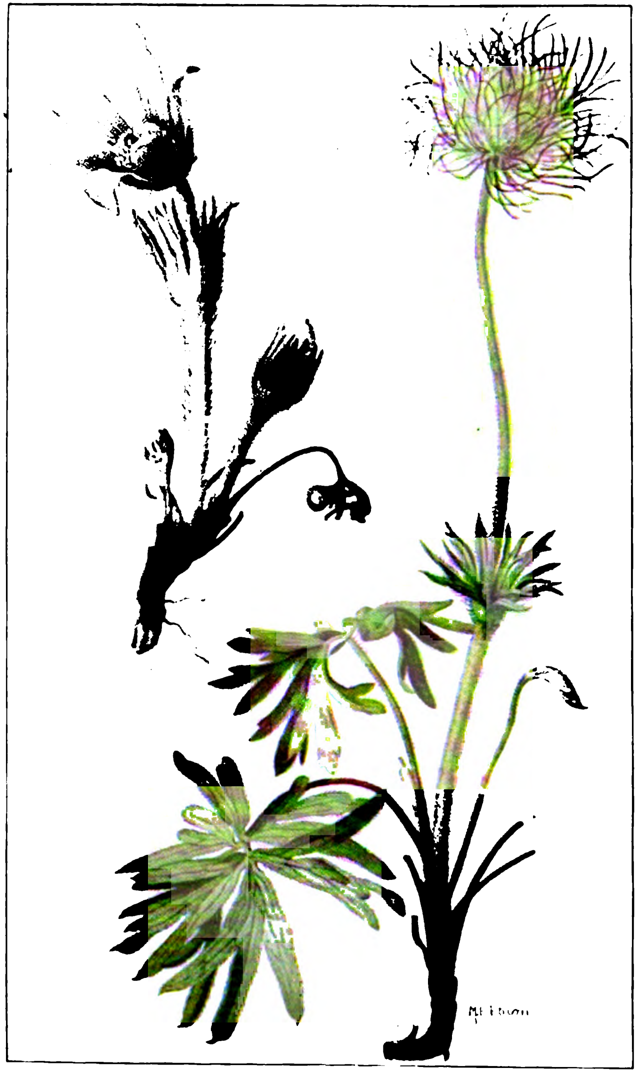
Arizona

SAHUARO or GIANT CACTUS
Carnegiea gigantea (Engelm.) Britton & Rose



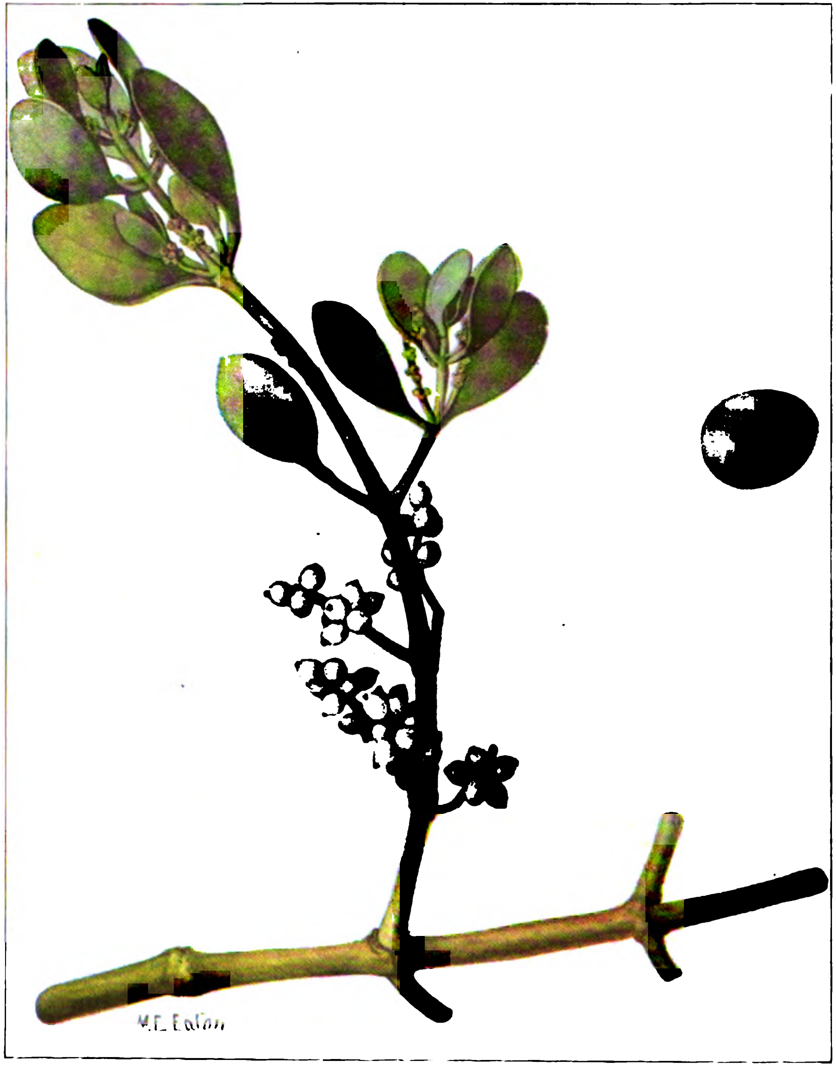
New Mexico

CACTUS
Echinocereus fendleri (Engelm.) Ruempl.



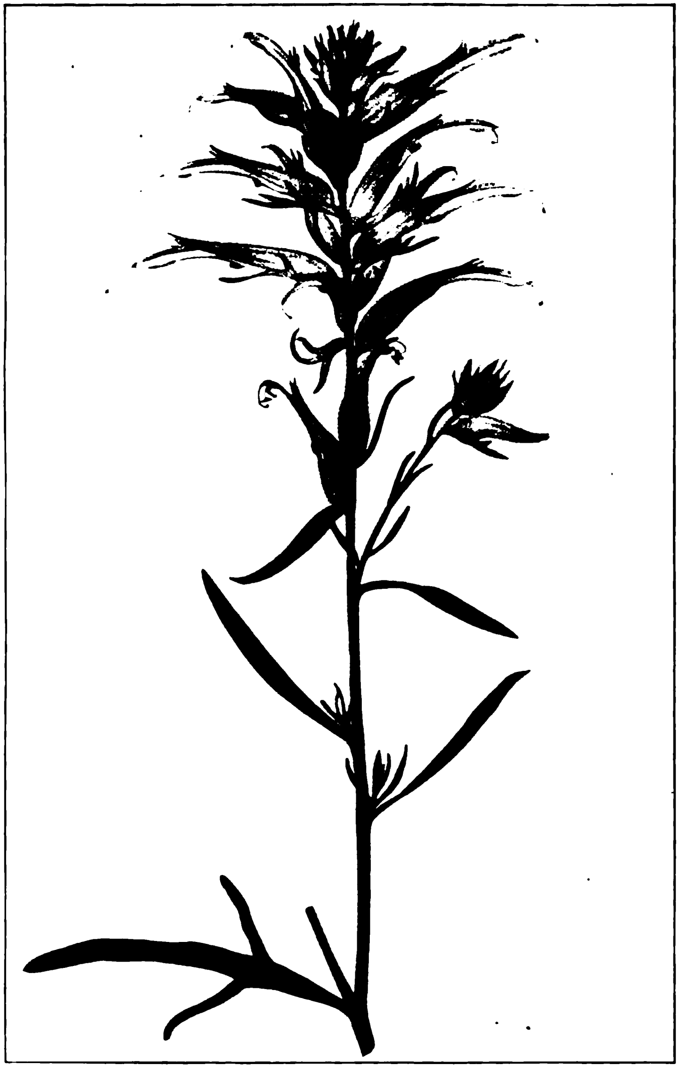
South Dakota

PASQUE FLOWER
Pulsatilla patens (L.) Mill.



Oklahoma

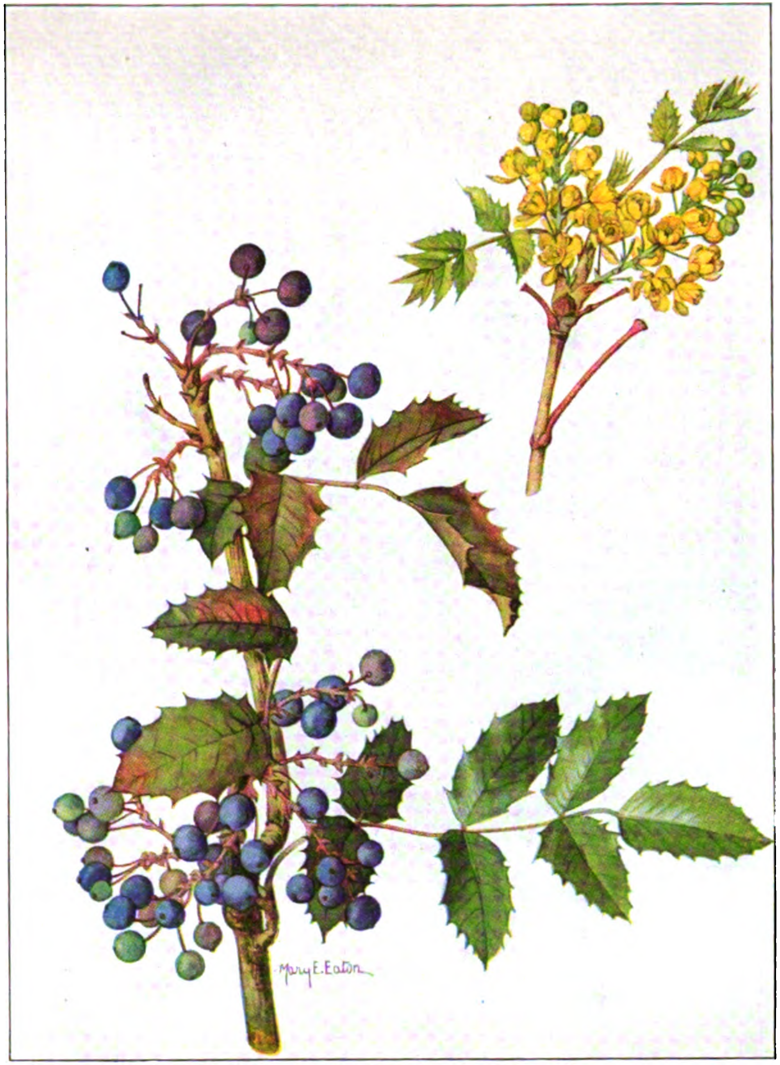
AMERICAN MISTLETOE
Phoradendron flavescens (Pursh) Nutt.



Wyoming

NARROW-LEAVED INDIAN PAINTBRUSH

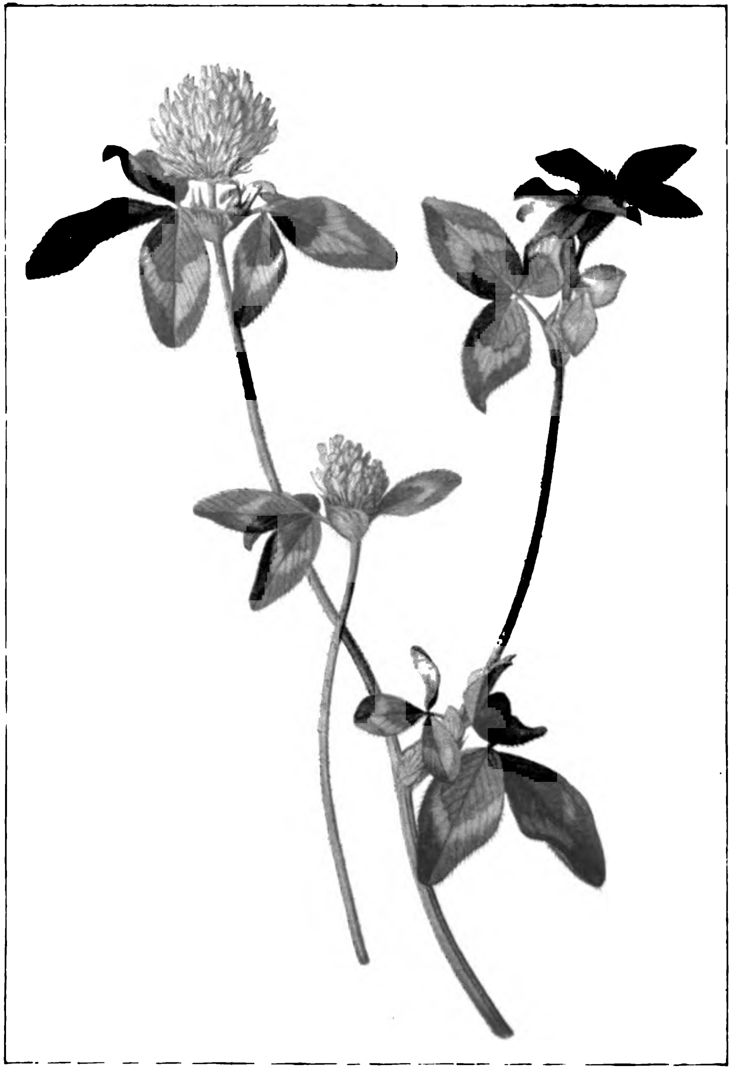
Castilleja linariaefolia Benth.



Oregon

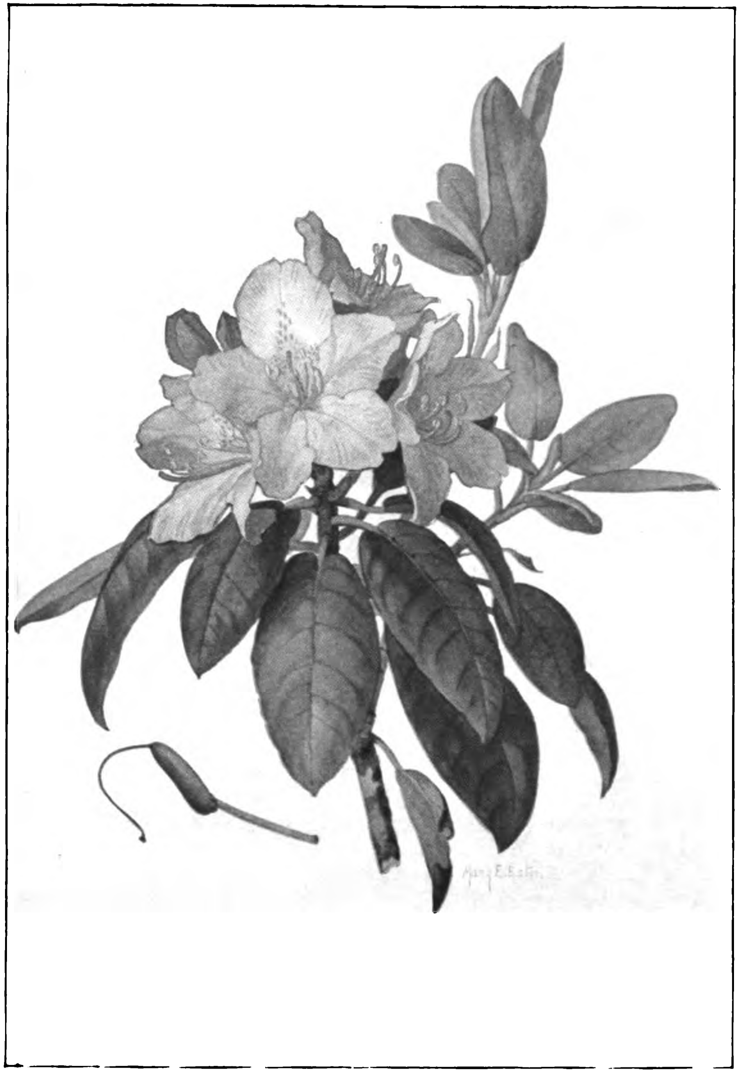
OREGON GRAPE

Berberis aquifolium Pursh



VERMONT

RED CLOVER
Trifolium pratense L.



WEST VIRGINIA

MOUNTAIN AMERICAN RHODODENDRON
Rhododendron maximum Michx.

The rhododendrons growing in Washington, or among the redwoods of California, or clothing the slopes of the Alleghenies with impenetrable thickets and in early summer glorifying them with bloom, are worth going far to see.

At its best, and rarely, the shrub attains a height of 35 feet. Its form, with spreading branches, twisting and interlocking, calls to mind the Greek meaning of its name, "rose tree." In less favorable locations the plant is sometimes less than five feet high. The wood is one of the strongest and hardest that grows and weighs 39 pounds to the cubic foot.

The rhododendron has no such clever trick of showering its pollen upon insect visitors as the mountain laurel, but, like the laurel, it protects itself by a sticky substance below the flower from ants and crawling insects which do not transfer pollen. The bee and other insect friends of the rhododendron find its nectar very gratifying, but the honey they make from it is said to be poisonous.

To the deeper pink, rather purplish rhododendron of the Carolinas, European gardeners pay the homage of careful cultivation, as they do also to some varieties native to Asia.

Americans might fittingly revive England's "Maying" custom and set aside an early summer day for pilgrimages to our mountains where the laurel and rhododendron bloom, in order properly to appreciate these perfect gifts of Nature.

RED CLOVER

(Trifolium pratense L.)

Member of the Pulse family, with the wild sensitive plant, the partridge pea, the wild peanut, the vetches, the tick trefoil, and the blue lupine as its cousins, the red clover, which the legislature of the Green Mountain State has decreed shall be accorded the honor of standing at the head of the Vermont floral procession, finds itself at home in all temperate America (see page 516).

The clover is an extraordinary seed-bearer. Darwin counted those of a large number of heads and found an average of 27 seeds per blossom. But when he kept the insects away not a single seed was set.

The clover blossom is preëminently the bumblebee's flower. When Australia first undertook to add this legume to her list of forage crops, as fine-looking fields of clover as one could imagine appeared in due time. But somehow the heads did not set seed and it seemed that failure was to follow the experiment. On looking around for a possible cause of this failure, it was found that the clover's best friend, the bumblebee, had not been imported along with the seed. As soon as this faithful servant was brought in and given time to establish itself, there were lively, hopeful days in the antipodean clover fields and no more failures of the crop to provide for future sowings.

The butterfly, too, long of tongue, can sip the nectar of these blossoms; but the light-weight insects with short tongues need not apply. The clover hides its sweets beneath a reddish lock that can be opened only by long tongues or heavy weights.

The child who has not plucked the tiny florets of the clover blossom and tasted their nectar is to be placed in the same category as the girl who has not taken a daisy and plucked the petals to the tune of "He loves me, he loves me not," for neither has known the simple joys of the field.

When James Whitcomb Riley asked what the lily and all the rest of the flowers were to a man who in babyhood knew the sweet clover blossom, it was not that he loved the lily less, but that he loved the clover more.

Who that has seen a herd of fine cows, sleek and fat and trim, in a field of red clover fails to understand the force of the phrase "Living in clover" as a description of worldly affluence? But even the cows have no advantage of the bumblebee and the butterfly when it comes to the joy the clover field gives, for neither ox-eye daisies, black-eyed susans, goldenrods, nor iron-weeds can afford such rich pastures for these insects as the well-cultivated meadows of clover offer them.

For ages the clover has figured in the mysticism of the Caucasian races. The four-leaved clover is regarded as a harbinger of good luck when one finds it growing, although it is probably more an evidence of the finder's powers of observation and, therefore, of ability to get on in the world. In Europe the peasants declare that a dream about clover foretells a happy marriage, long life, and prosperity. There is another superstition to the effect that if one carries a four-leaved clover at Christmas time it will bring the ability to see witches and sprites. Still another fancy is expressed in the old couplet to the effect that finding an even ash leaf or a four-leaved clover is sure to bring a sight of the finder's sweetheart before the day is over.

Clover is thought by the herb doctor to have some medicinal properties. For instance, it is claimed that a syrup made from its blossoms is a cure for whooping-cough; and many a country child knows the joy of red clover tea at impromptu parties.

The clover is not a native American plant. It was brought here from Europe, where it is widely cultivated; and, again, it is only a settler in Europe, for it originally migrated there, like so many other plants of economic value, from Asia. However, it has a right to be called a blue-stocking among our flowers, for it is one of those favored individuals of the plant world that enrich the soil as they grow. Man has been long ages learning how to extract nitrogen, the most expensive of all fertilizing elements, from the air; but the clover learned that secret untold centuries ago, and instead of levying heavy tribute on the nitrogen supply of the ground, it draws its supplies from the air, uses what it can, and presents the remainder to the land with its compliments.

It joins the cow-pea, the soy-bean, the locust tree, and other legumes in being a great supporter of soil fertility. Compare the sod under the next locust tree you see with that under an oak, and you will realize why the clover and its cousins are allies of the progressive farmer.

OUR FIRST ALLIANCE

By J. J. Jusserand

Ambassador of France to the United States

At this time, when we are all reading the story of our expeditionary army to France, it is profitable to review the voyage of the French expedition of 137 years ago to America—an expedition undertaken with the same unselfish object as ours of today, but under conditions of travel and life so different. The following contribution by Ambassador Jusserand is abridged from his notable volume, entitled "With Americans of Past and Present Days," by courtesy of the publishers, Messrs. Charles Scribner's Sons.—Editor.

THE American war had been for five years in progress; for two years a treaty of alliance, having as sole object "to maintain effectually the liberty, sovereignty, and independence, absolute and unlimited, of the United States," bound us French to the "insurgents"; successes and reverses followed each other in turn: Brooklyn, Trenton, Brandywine, Saratoga.

Quite recently the news had come of the double victory at sea and on land of d'Estaing at Grenada, and Paris had been illuminated. The lights were scarcely out when news arrived of the disaster of the same d'Estaing at Savannah. All France felt anxious concerning the issue of a war which had lasted so long and whose end continued to be doubtful.

When, in the first months of 1780, the report went about that a great definitive effort was to be attempted; that it was not this time a question of sending ships to the Americans, but of sending an army, and that the termination of the great drama was near, the enthusiasm was unbounded. All wanted to take part. There was a prospect of crossing the seas, of succoring a people fighting for a sacred cause—a people of whom all our volunteers praised the virtues; the people led by Washington, and represented in Paris by Franklin.

An ardor as of Crusaders inflamed the hearts of French youths, and the intended expedition was, in fact, the most important that France had launched beyond the seas since the distant time of the Crusades. The cause was a truly sacred one — the cause of liberty — a magical word which then stirred the hearts of the many. "Why is liberty so rare?" Voltaire had said, "Because the most valuable of possessions."

All those who were so lucky as to be allowed to take part in the expedition were convinced that they would witness memorable, perhaps unique, events, and it turned out, indeed, that they were to witness a campaign which, with the battle of Hastings, where the fate of England was decided in 1066, and that of Bouvines, which made of France in 1214 a great nation, was to be one of the three military actions with greatest consequences in which for the last thousand years the French had participated.

FRENCH FAITH IN AMERICA

A striking result of this state of mind is that an extraordinary number of those who went noted down their impressions, kept journals, drew sketches. Never perhaps during a military campaign was so much writing done, nor were so many albums filled with drawings.

Notes, letters, journals, sketches have come down to us in large quantities, and from all manner of men, for the passion of observing and narrating was common to all kinds of people: journals and memoirs of army chiefs like Rochambeau, or chiefs of staff like Chastellux, a member of the French Academy, adapter of Shakespeare, and author of a *Félicité Publique,* which, Franklin said, showed him to be "a real friend of humanity"; narratives of a regimental chaplain, like Abbé Robin, of a skeptical rake like the Duke de Lauzun; journals of officers of various ranks, like Count de Deux-Ponts, Prince de Broglie, Count de Ségur, son of the marshal, himself afterward an Academician and an ambassador; Mathieu-Dumas, future minister of war of a future king of Naples, who bore the then unknown name of Joseph Bonaparte; the Swedish Count Axel de Fersen, one of Rochambeau's aides, who was to organize the French royal family's flight to Varennes and to die massacred by the mob in his own country; journal, too, among many others, of a modest quartermaster like Blanchard, who gives a note quite apart, observes what others do not, and whose tone, as that of a subordinate, is in contrast with the superb ways of the "seigneurs," his companions.

From page to page, turning the leaves, one sees appear, without speaking of Lafayette, Kosciusko, and the first enthusiasts, many names just emerging from obscurity, never to sink into it again: Berthier, La Pérouse, La Touche-Tréville, the Lameth brothers, Bougainville, Custine, the Bouillé of the flight to Varennes, the La Clocheterie of the fight of *La Belle Poule,* the Duportail who was to be minister of war under the Constituent Assembly; young Talleyrand, brother of the future statesman; young Mirabeau, brother of the orator, himself usually known for his portly dimensions as *Mirabeau-tonneau,* ever ready with the cup or the sword; young Saint-Simon, not yet a pacifist and not yet a Saint-Simonian; Suffren, in whose squadron had embarked the future Director Barras, an officer then in the regiment of Pondichéry.

ALL FRANCE BEHIND AMERICA THEN

All France was really represented—to some extent that of the past, to a larger one that of the future.

A juvenile note, in contrast with the quiet dignity of the official reports by the heads of the army, is given by the unprinted journal, a copy of which is preserved in the Library of Congress, kept by one more of Rochambeau's aides, Louis Baron de Closen, an excellent observer, gay, warm-hearted, who took seriously all that pertained to duty, and merrily all the rest, especially mishaps.

Useful information is also given by some unprinted letters of George Washington, some with the superscription still preserved: "On public service — to his Excellency Count de Rochambeau, Williamsburg, Virginia," the whole text often in the great chief's characteristic handwriting, clear and steady, neither slow nor hasty, with nothing blurred and nothing omitted, with no trepidation, no abbreviation, the writing of a man with a clear conscience and clear views, superior to fortune, and the convinced partisan, in every circumstance throughout life, of the straight line.

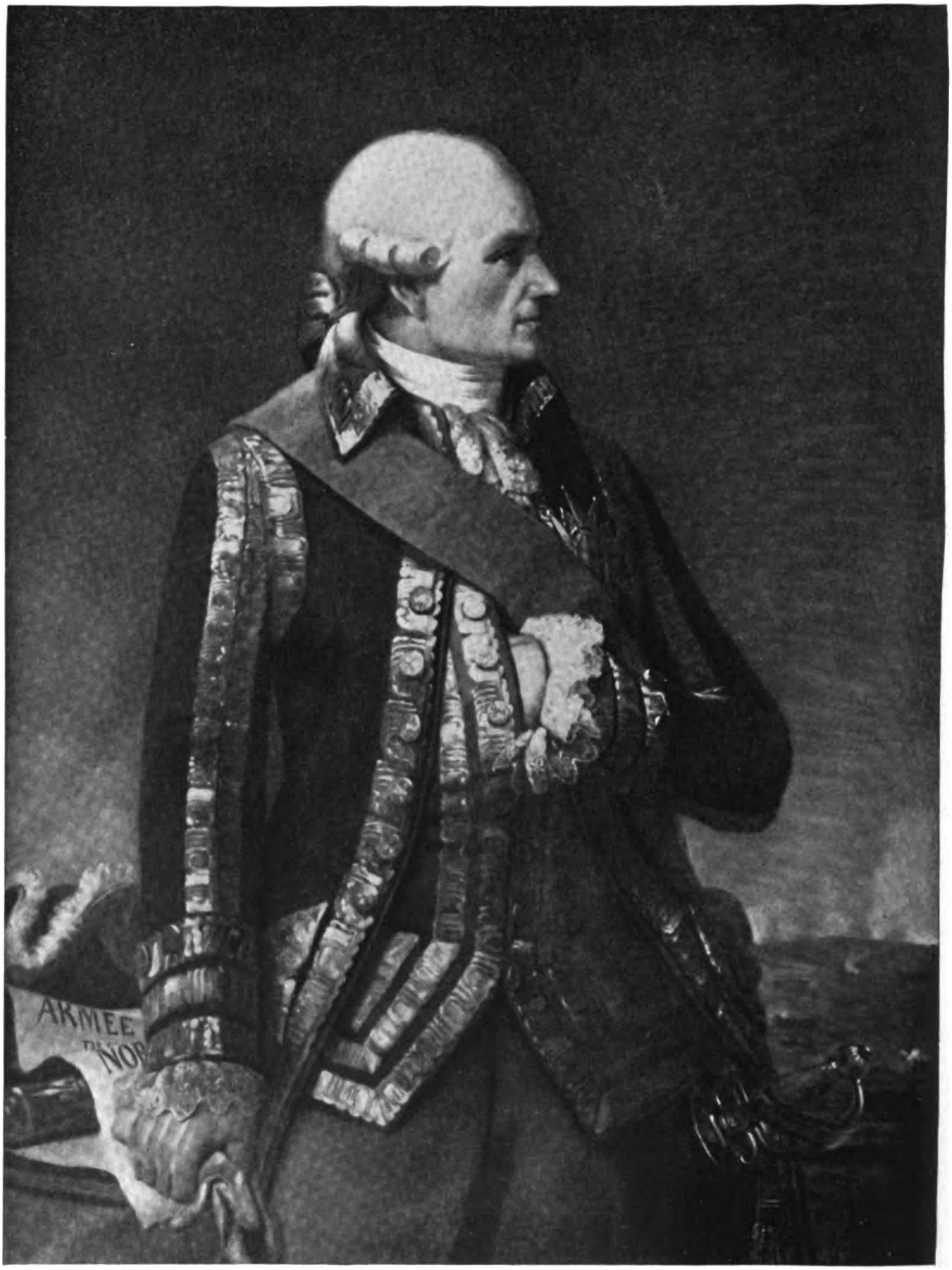
The British Government has, moreover, most liberally opened its archives, so that, both through the recriminatory pamphlets printed in London after the disaster and the dispatches now accessible, one can know what was said day by day in New York and out of New York, in the redoubts at Yorktown, and in the French and American trenches around the place.

AN EXTRAORDINARY TASK

Lieut. Gen. Jean-Baptiste Donatien de Vimeur, Comte de Rochambeau, aged then fifty-five, and Washington's senior by seven years, was in his house, still in existence, Rue du Cherche-Midi, Paris, at the beginning of March, 1780; he was ill and about to leave for his castle of Rochambeau in Vendomois; post-horses were in readiness when, in the middle of the night, he received, he says in his memoirs, a "courier bringing him the order to go to Versailles and receive the instructions of his Majesty."

For some time rumors had been afloat that the great attempt would soon be made. He was informed that the news was true, and that he would be placed at the head of the army sent to the assistance of the Americans.

The task was an extraordinary one. He would have to reach the New World with a body of troops packed on slow transports, to avoid the English fleets, to



GENERAL ROCHAMBEAU

A distinguished veteran of three wars in Europe, Rochambeau came to America at the head of 5,000 French regulars to succor the Thirteen Colonies in their struggle for liberty. A more experienced soldier and an older man than Washington, the French general, with admirable spirit and magnanimity, placed himself and his troops unreservedly under the American commander-in-chief, serving as an integral part of the colonial forces.

fight in a country practically unknown, by the side of men not less so, and whom we had been accustomed to fight rather than befriend, and for a cause which had never before elicited enthusiasm at Versailles—the cause of republican liberty.

This last point was the strangest of all, so strange that even Indians, friends of the French in former days, asked Rochambeau, when they saw him in America, how it was that his king could think fit to help other people against "their own father," their king.

Rochambeau replied that the latter had been too hard on his subjects; that they were right, therefore, in shaking off the yoke, and we in helping them to secure "that natural liberty which God has conferred on man."

AN ALLIANCE WHICH FORBADE CONQUEST

This answer to "Messieurs les Sauvages" is an enlightening one; it shows what was the latent force that surmounted all obstacles and caused the French nation to stand as a whole, from beginning to end, in favor of the Americans, to applaud a treaty of alliance which, while entailing the gravest risks, forbade us all conquest, and to rejoice enthusiastically at a peace which after a victorious war added nothing to our possessions. This force was the increasing passion among the French for precisely "that natural liberty which God has conferred on man."

Hatred of England, quickened though it had been by the harsh conditions of the Treaty of Paris bereaving us of Canada, in 1763, had much less to do with it than is sometimes alleged. Such a feeling existed, it is true, in the hearts of some of the leaders, but not of all; it did in the minds also of some of the officers, but again not of all.

What predominated in the mass of the nation, irrespective of any other consideration, was sympathy for men who wanted to fight injustice and to be free. The cause of the insurgents was popular because it was associated with the notion of liberty; people did not look beyond.

It is often forgotten that this time was not in France a period of Anglophobia, but of Anglomania. Necker, so influential, and who then held the purse-strings, was an Anglophile; so was Prince de Montbarey, minister of war; so was that Duke de Lauzun who put an end for a time to his love affairs and came to America at the head of his famous legion.

All that was English was admired and, when possible, imitated: manners, philosophy, sports, clothes, parliamentary institutions, Shakespeare, just translated by Le Tourneur, with the King and Queen as patrons of the undertaking: but, above all, wrote Count de Ségur, "we were all dreaming of the liberty, at once calm and lofty, enjoyed by the entire body of citizens of Great Britain."

THE MAGIC WORDS TO CONJURE WITH

Such is the ever-recurring word. Liberty, philanthropy, natural rights—these were the magic syllables to conjure with. "All France," we read in Grimm and Diderot's correspondence, "was filled with an unbounded love for humanity," and felt a passion for "those exaggerated general maxims which raise the enthusiasm of young men and which would cause them to run to the world's end to help a Laplander or a Hottentot."

The ideas of Montesquieu, whose *Esprit des Lois* had had 22 editions in one year, of Voltaire, of d'Alembert, were in the ascendant, and liberal thinkers saw in the Americans propagandists for their doctrine. General Howe having occupied New York in 1776, Voltaire wrote to d'Alembert: "The troops of Doctor Franklin have been beaten by those of the King of England. Alas! philosophers are being beaten everywhere. Reason and liberty are unwelcome in this world."

AN ALLIANCE WITH NO HATRED FOR THE COMMON ENEMY

Another of the master minds of the day, the economist, thinker, and reformer Turgot, the one whose advice, if followed, would have possibly secured for us a bloodless revolution, was of the same opinion. In the famous letter written by him on the 22d of March, 1778, to his English friend, Doctor Price, Turgot showed himself, just as the French nation was, ardently pro-American, but not anti-English.

He deplored the impending war, which ought to have been avoided by England's acknowledging in time "the folly of its absurd project to subjugate the Americans. . . . It is a strange thing that it be not yet a commonplace truth to say that no nation can ever have the right to govern another nation; that such a government has no other foundation than force, which is also the foundation of brigandage and tyranny; that a people's tyranny is, of all tyrannies, the most cruel, the most intolerable, and the one which leaves the least resources to the oppressed; . . . for a multitude does not calculate, does not feel remorse, and it bestows on itself glory when all that it deserves is shame."

The Americans, according to Turgot, must be free, not only for their own sake, but for the sake of humanity; an experiment of the utmost import is about to begin, and should succeed. He added this, the worthy forecast of a generous mind:

"It is impossible not to form wishes for that people to reach the utmost prosperity it is capable of. That people is the hope of mankind. It must show to the world by its example that men can be free and tranquil, and can do without the chains that tyrants and cheats of all garb have tried to lay on them under pretense of public good. It must give the example of political liberty, religious liberty, commercial and industrial liberty.

"The shelter which it is going to offer to the oppressed of all nations will console the earth. The ease with which men will be able to avail themselves of it and escape the effects of a bad government will oblige governments to open their eyes and to be just. The rest of the world will perceive by degrees the emptiness of the illusions on which politicians have festered."

Toward England Turgot has a feeling of regret on account of its policies, but no trace of animosity; and, on the contrary, the belief that, in spite of what some people of note were alleging, the absolutely certain loss of her American colonies would not result in a diminution of her power. "This revolution will prove, maybe, as profitable to you as to America."

THE HONORABLE RULES OF WAR RIGOROUSLY OBSERVED

Not less characteristic of the times and of the same thinker's turn of mind is a brief memorial written by him for the King shortly after, when Captain Cook was making his third voyage of discovery, the one from which he never returned. "Captain Cook," Turgot said, "is probably on his way back to Europe. His expedition having no other object than the progress of human knowledge, and interesting, therefore, to all nations, it would be worthy of the King's magnanimity not to allow that the result be jeopardized by the chances of war."

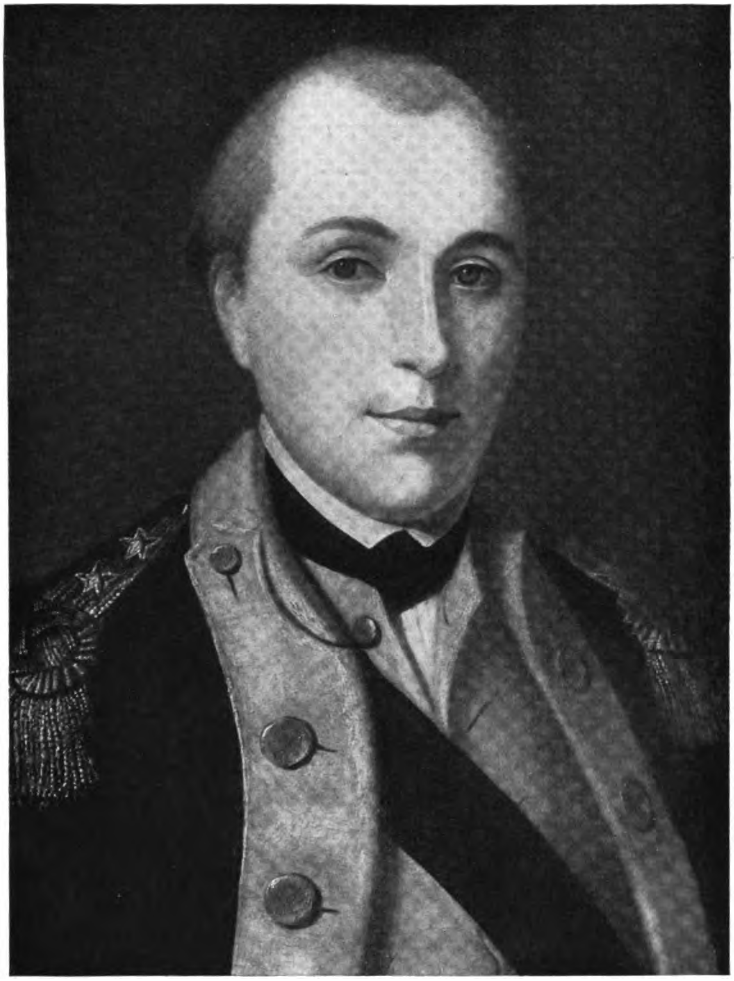
Orders should be given to all French naval officers "to abstain from any hostile act against him or his ship, and allow him to freely continue his navigation, and to treat him in every respect as the custom is to treat the officers and ships of neutral and friendly countries."

The King assented and had our cruisers notified of the sort of sacred character which they would have to recognize in that ship of the enemy—a small fact in itself, but showing the difference between the wars in those days and in ours, when we have had to witness the wanton destruction of the Louvain library, the shelling of the Rheims cathedral, and the Arras town hall.

A FIGHT NOT FOR RECOMPENSE, BUT FOR LIBERTY

An immense aspiration was growing in France for more equality, fewer privileges, simpler lives among the great, less hard ones among the lowly, more accessible knowledge, the free discussion by all of the common interests of all. A fact of deepest import struck the least attentive: French masses were becoming more and more thinking masses. One should not forget that between the end of the American Revolution and the beginning of the French one only six years elapsed; between the American and the French Constitutions but four years.

It was not, therefore, a statement of small import that Franklin had conveyed to Congress when he wrote from France: "The united bent of the nation is mani-



MARQUIS DE LAFAYETTE

His passion for liberty enkindled by the heroic struggle of the American colonies, Marie Jean Paul Yves Roch Gilbert du Motier Lafayette, a youth of 19, determined to cast his fortunes with the followers of Washington. Arrested by order of his sovereign when he attempted to sail from Bordeaux, the dauntless boy escaped from France in disguise and embarked with eleven companions from a port in Spain. Landing in America in April, 1779, he went at once to Philadelphia, where Congress hesitated to give him a commission as major general, which had been promised by the American agent in Paris.

Immediately Lafayette waived all claim to military rank and asked to be allowed to serve in the Continental Army "as a volunteer and without pay." Happily, Congress proved no less magnanimous; his commission was issued at once. The day following he met Washington, and there began a lifelong friendship between the two great patriots and lovers of liberty, epitomizing the mutual devotion and admiration which the people of France and of the United States were henceforth to entertain toward each other for all time. It was largely through Lafayette's influence that Rochambeau came to America with a division of French soldiers which turned the tide of defeat into victory for the colonies.

Returning to his native France, Lafayette played a distinguished rôle in the events of the French Revolution, his devotion to the cause of liberty ever remaining unsullied by wanton deeds of bloodshed or vainglorious striving for power. Having been made commander-in-chief of the National Guard of Paris on the day following the storming of the Bastille, he sent the key of that grim stronghold to General Washington as a symbol of the overthrow of despotism and the triumph of free government in France. That symbol is today one of America's most treasured mementos, carefully guarded in the nation's shrine—Mt. Vernon.

festly in our favor." And he deplored elsewhere that some could think that an appeal to France's own interest was good policy:

"Telling them their commerce will be advantaged by our success, and that it is their *interest* to help us, seems as much as to say: 'Help us and we shall not be obliged to you.' Such indiscreet and improper language has been sometimes held here by some of our people and produced no good effect. The truth is," he said also, that "this nation is fond of glory, particularly that of protecting the oppressed."

The treaty of commerce, accompanying the treaty of alliance of 1778, had been in itself a justification of this judgment. Help from abroad was so pressingly needed in America that almost any advantages requested by France as a condition would have been granted; but that strange sight was seen: advantages being offered, unasked, by one party and declined by the other.

France decided at once not to accept anything as a recompense, not even Canada, if that were wrested from the English, in spite of Canada's having been French from the first and having but recently ceased to be such. The fight was not for recompense, but for liberty, and Franklin could write to Congress that the treaty of commerce was one to which all the rest of the world, in accordance with France's own wishes, was free to accede, when it chose, on the same footing as herself, England included.

This was so peculiar that many had doubts; John Adams never lost his; even Washington himself had some, and when plans were submitted to him for an action in Canada he wondered, as he wrote, whether there was not in them "more than the disinterested zeal of allies." What would take place at the peace if the allies were victorious? Would not France require, in one form or another, some advantages for herself? But she did not; her peace was to be like her war, pro-American rather than anti-English.

THE IDEAL LEADER—ROCHAMBEAU

Aware of the importance and difficulty of the move it had decided upon, the French Government had looked for a trained soldier, a man of decision and of sense, one who would understand Washington and be understood by him, would keep in hand the enthusiasts under his orders, and would avoid ill-prepared, risky ventures. The government considered it could do no better than to select Rochambeau. It could, indeed, do no better.

Rochambeau was appointed an officer and served on his first campaign in Germany at sixteen; fought under Marshal de Saxe; was a colonel at twenty-two (Washington was to become one also at twenty-two); received at Laufeldt his two first wounds, of which he nearly died. At the head of the famous Auvergne regiment, "Auvergne sans tache" (Auvergne the spotless), as it was called, he took part in the chief battles of the Seven Years' War, notably in the victory of Klostercamp, where spotless Auvergne had 58 officers and 800 soldiers killed or wounded, the battle made memorable by the episode of the Chevalier d'Assas, who went to his heroic death in the fulfillment of an order given by Rochambeau. The latter was again severely wounded, but, leaning on two soldiers, he could remain at his post till the day was won.

On the opposite side of the same battlefields were fighting many destined, like Rochambeau himself, to take part in the American war; it was like a preliminary rehearsal of the drama that was to be. At the second battle of Minden, in 1759, where the father of Lafayette was killed, Rochambeau covered the retreat, while in the English ranks Lord Cornwallis was learning his trade, as was, too, but less brilliantly, Lord George Germain, the future colonial secretary of the Yorktown period.

A HAPPY MARRIAGE WITH ANNALS BRIEF

When still very young, Rochambeau had contracted one of those marriages so numerous in the eighteenth, as in every other, century, of which nothing is said in the memoirs and letters of the period, because they were what they should be—happy ones. Every right-minded and right-hearted man will find less pleasure in the sauciest anecdote told by Lauzun than in the simple and brief lines written in his old age by Rochambeau: "My good star gave me such a wife as I could desire; she has been for me a cause of constant happiness throughout life, and I hope, on my side, to have made her happy by the tenderest amity, which has never varied an instant during nearly sixty years."

Informed at Versailles of the task he would have to perform, Rochambeau set to work to get everything in readiness, collecting information, talking with those who knew America, and noting down in his green-garbed registers, which were to accompany him in his campaign, the chief data thus secured.

He also addressed to himself, as a reminder, a number of useful recommendations, such as these: "To take with us a quantity of flints, . . . much flour and biscuit; have bricks as ballast for the ships, to be used for ovens; to try to bring with us all we want and not to have to ask from the Americans, who are themselves in want; . . . to have a copy of the atlas brought from Philadelphia by Mr. de Lafayette; . . . to have a portable printing-press, like that of Mr. d'Estaing, handy for proclamations . . . siege artillery is indispensable."

Some of the notes are of grave import and were not lost sight of throughout the campaign: "Nothing without naval supremacy."

NOTHING WITHOUT NAVAL SUPREMACY

To those intrusted with the care of loading the vessels he recommends that all articles of the same kind be not placed on the same ship, "so that in case of mishap to any ship the whole supply of any kind of provisions be not totally lost."

When all were there, however, forming a total of 5,000 men, the maximum was so truly reached that a number of young men, some belonging to the best-known French families, who were arriving at Brest from day to day, in the hope of being added to the expedition, had to be sent back.

The departure, which it was necessary to hasten while the English were not yet ready, was beset with difficulties. Tempests, contrary winds, and other mishaps had caused vexatious delay; the *Comtesse de Noailles* and the *Conquérant* had come into collision and had had to be repaired. "Luckily," wrote Rochambeau to Montbarey, with his usual good humor, "it rains also on Portsmouth." At last, on the 2d of May, 1780, the fleet of seven ships of the line and two frigates, conveying thirty-six transports, weighed anchor for good. "We shall have the start of Graves," the general wrote again, "for he will have to use the same wind to leave Portsmouth."

At sea now for a long voyage, two or three months perhaps, with the prospect of calms, of storms, of untoward encounters, of scurvy for the troops. On board the big *Duc de Bourgogne,* of eighty guns, with Admiral de Ternay, Rochambeau adds now and then paragraphs to a long report which is a kind of journal, assuring the minister, after the first fortnight, that all is well on board: "We have no men sick other than those which the sea makes so, among whom the Marquis de Laval and my son play the most conspicuous part." He prepares his general instructions to the troops.

On board the smaller craft life was harder, and numerous unflattering descriptions have come down to us in the journals kept by so many officers of the army, especially in that of the aforementioned young captain, Louis Baron de Closen, later one of the aides of Rochambeau.

A FIRST-HAND PICTURE OF LIFE IN THE FRENCH FLEET

He confesses, but with no undue sentimentalism, that he was saddened at first to some extent at the prospect of an absence that might be a long one, particularly when thinking "of a charming young fiancée, full of wit and grace. . . . My profession, however, does not allow me to yield too much to sensibility; so I am now perfectly resigned."

It is hard at first to get accustomed, so tight-packed is the ship, but one gets inured to it, in spite of the "buzzing of so numerous a company," of the lack of breathing space, and of what people breathe being made unpleasant by all sorts of "exhalations" from the ship, the masses of humanity on board, "and a few dogs."

Closen has the good luck not to be inconvenienced by the sea, settles in his corner, and from that moment till the end takes pleasure in watching life around him. He learns how to make nautical observations, describes his companions in his journal, and especially the captain, a typical old tar who has an equal faith in the efficacy of hymns and of oaths.

"Prayer is said twice a day on the deck, which does not prevent there being much irreligion among seamen. I have often heard our captain swear and curse and freely use the worst sailors' language while he was praying and chanting:

> "'Ja mets ma confiance,
> Vierge, en votre secours,
> Et quand ma dernière heure
> Viendra, guidez mon sort;
> Obtenez que je meure
> De la plus sainte mort.'

Various incidents break the monotony of the journey. On the 18th of June the *Surveillante* captures an English corsair, which is a joy; but they learn from her the fall of Charleston and the surrender of Lincoln, which gives food for thought.

A TRAP THAT WAS AVOIDED

Nothing better shows the difference between old-time and present-time navigation than the small fact that while on the way they indulge in fishing. On board the *Comtesse de Noailles* they capture flying-fishes, which are "very tender and delicious to eat, fried in fresh butter, like gudgeons."

An occasion offers to open fight, with the advantage of numerical superiority, on six English vessels; some shots are exchanged, but with great wisdom, and, in spite of the grumblings of all his people, Ternay refuses to really engage them, and continues his voyage.

"He had his convoy too much at heart," says Closen, "and he knew too well the importance of our expedition, his positive orders being that he must make our army arrive *as quickly as possible*, for him not to set aside all the entreaties of the young naval officers, who, I was told, were very outspoken on that score, as well as most of the land officers, who know nothing of naval matters."

The event fully justified Ternay, for Graves, whose mission it had been to intercept him and his slow and heavy convoy, missed his opportunity by twenty-four hours only, reaching New York, where he joined forces with Arbuthnot, just as our own ships were safe at Newport. The slightest delay on Ternay's part might have been fatal.

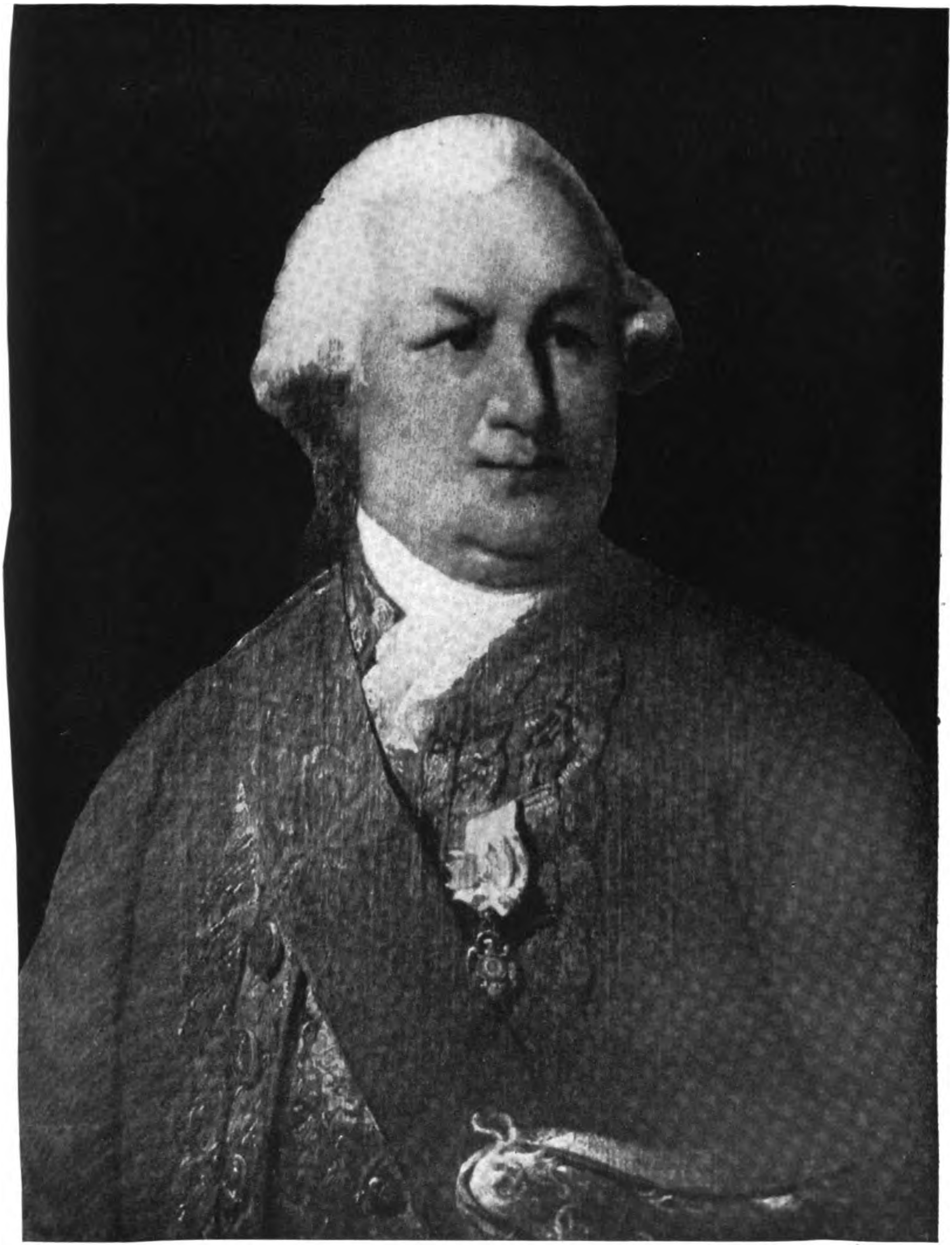
The more so since, when nearing the coast, our fleet had fallen into fogs. "Nothing so sad and dangerous at sea as fogs," Closen sententiously writes; "besides the difficulty of avoiding collisions in so numerous a fleet, each vessel, in order to shun them, tries to gain space; thus one may chance to get too far from the center. The standing orders for our convoy were, in view of avoiding those inconveniences, to beat the drums every quarter of an hour or fire petards. The men-of-war fired their guns or sent rockets. The speed limit was three knots during the fog, so that each vessel might, as far as possible, continue keeping company with its neighbor."

In spite of all which the *Ile de France* was lost, and there was great anxiety; she was not seen again during the rest of the journey, but she appeared later, quite safe, at Boston.

WASHINGTON GIVEN THE HONORS OF A MARSHAL IN THE FRENCH ARMY

The landing orders of Rochambeau, making known now to all concerned the intentions of the government, were clear and peremptory. Drawn up by him on board the *Duc de Bourgogne*, he had caused copies to be carried to the chiefs of the several corps on board the other ships:

"The troops which His Majesty is sending to America are auxiliary to those of the United States, his allies, and placed under the orders of General Washington, to whom the honors of a marshal of France will be rendered. The same with the President of Congress," which avoided the possibility of any trouble as to precedence, no one in the French army having such a rank.



ADMIRAL DE GRASSE, WHO RISKED AND DID MORE FOR THE UNITED STATES THAN ANY SINGLE FOREIGNER

By blockading the James and York rivers and by repulsing the British fleet, thereby preventing its coming to the relief of Lord Cornwallis at Yorktown, this French naval officer became a potent factor in the establishment of the American Republic (see pp. 537 and 541).

"In case of an equality of rank and duration of service, the American officer will take command. . . . The troops of the King will yield the right side to the allies; French troops will add black to their cockades, black being the color of the United States," and some such hats, with black and white cockades, are still preserved at Fraunce's Tavern, New York.

"The intention of His Majesty," the general continues, "is that there be perfect concert and harmony between the generals and officers of the two nations. The severest discipline will be observed. . . . It is forbidden to take a bit of wood, a sheaf of straw, any kind of vegetables, except amicably and in paying. . . . All faults of unruliness, disobedience, insubordination, ill will, brutal and sonorous drunkenness . . . will be punished, according to ordinances, with strokes of the flat of the sword." Even "light faults of lack of cleanliness or attention" will be punished. "To make the punishment the harder for the French soldier, he will be barred from military service during his detention."

The army, but not the fleet, had been placed under the orders of Washington. Ternay's instructions specified, however, that while his squadron had no other commander than himself, it was expected that he "would proffer all assistance that might facilitate the operations of the United States," and that he would allow the use of our ships "on every occasion when their help might be requested."

Good will was obviously the leading sentiment, and the desire of all was to give as little trouble and bring as much useful help as possible.

THE FRENCH FLEET AT NEWPORT

On the 11th day of July the fleet reached Newport, after seventy days at sea, which was longer than Columbus had taken on his first voyage, but which was nothing extraordinary. Abbé Robin, a chaplain of the army, arrived later, after a journey of eighty-five days, none the less filled with admiration for those "enormous machines with which men master the waves"—a very minute enormity from our modern point of view.

"There were among the land troops," says Closen, "endless shouts of joy" at the prospect of being on terra firma again. The troops, owing to their having been fed on salt meat and dry vegetables, with little water to drink (on board the *Comtesse de Noailles* water had become corrupt; it was now and then replaced by wine, "but that heats one very much"), had greatly suffered. Scurvy had caused its usual ravages; 600 or 700 soldiers and 1,000 sailors were suffering from it; some had died.

They were now confronted by the unknown. What would that unknown be? Rochambeau had only his first division with him; would he be attacked at once by the English, who disposed of superior naval and land forces about New York? And what would be the attitude of the Americans themselves? Everybody was for them in France, but few people had a real knowledge of them. Lafayette had, but he was young and enthusiastic. Would the inhabitants, would their leader, Washington, would their army, answer his description?

A GAME OF NAVAL CHESS

On the arrival of the fleet Newport had fired "13 grand rockets" and illuminated its windows, but that might be a mere matter of course. Of these illuminations the then president of Yale, Ezra Stiles, has left a noteworthy record: "The bell rang at Newport till after midnight, and the evening of the 12th Newport illuminated; the Whigs put thirteen lights in the windows; the Tories or doubtfuls four or six. The Quakers did not choose their lights should shine before men, and their windows were broken."

The game was, moreover, a difficult one and had to be played on an immense chess-board, including North and South (Boston, New York, Charleston, and the Chesapeake), including even "the Isles"—that is, the West Indies—and what took place there, which might have so much importance for continental operations, had constantly to be guessed or imagined for lack of news.

Worse than all, the reputation of the French was, up to then, in America such as hostile English books and caricatures and inconsiderate French ones had made it. We knew it, and so well, too, that the appropriateness of having our troops winter in our colonies of the West Indies was at one time considered. Our minister, Gérard, was of that opinion: "The Americans are little accustomed to live with French people, for whom they cannot have as yet a very marked inclination."

"It is difficult to imagine," said Abbé Robin, "the idea Americans entertained about the French before the war. They considered them as groaning under the yoke of despotism, a prey to superstition and prejudices, almost idolatrous in their religion, and as a kind of light, brittle, queer-shapen mechanism, only busy frizzling their hair and painting their faces, without faith or morals." How would thousands of such mechanisms be received?

PREPARING TO GIVE THE ENEMY "HOT SHOT"

With his usual clear-headedness, Rochambeau did the necessary thing on each point. To begin with, in case of an English attack, which was at first expected every day, he lost no time in fortifying the position he occupied, "having," wrote Mathieu-Dumas, "personally selected the chief points to be defended, and having batteries of heavy artillery and mortars erected along the channel, with furnaces to heat the balls."

During "the first six days," says Closen, "we were not quite at our ease, but, luckily, Messieurs les Anglais showed us great consideration, and we suffered from nothing worse than grave anxieties." After the second week Rochambeau could write home that if Clinton appeared he would be well received. Shortly after he feels sorry the visit is delayed; later, when his own second division, so ardently desired, did not appear, he writes to the war minister: "In two words, Sir Henry Clinton and I are very punctilious, and the question is between us who will first call on the other. If we do not get up earlier in the morning than the English, and the reinforcements they expect from Europe reach them before our second division arrives, they will pay us a visit here that I should prefer to pay them in New York."

Concerning the reputation of the French, Rochambeau and his officers were in perfect accord; it would change if exemplary discipline were maintained throughout the campaign. There is nothing the chief paid more attention to than this, nor with more complete success. Writing to Prince de Montbarey a month after the landing, Rochambeau says: "I can answer for the discipline of the army; not a man has left his camp; not a cabbage has been stolen; not a complaint has been heard."

NOT ONE COMPLAINT AGAINST THE CONDUCT OF THE FRENCH TROOPS

To the President of Congress he had written a few days before: "I hope that account will have been rendered to Your Excellency of the discipline observed by the French troops; there has not been one complaint; not a man has missed a roll-call. We are your brothers and we shall act as such with you; we shall fight your enemies by your side as if we were one and the same nation."

Mentioning in his memoirs the visit of those "savages" who had been formerly under French rule and persisted in remaining friendly to us, he adds: "The sight of guns, troops, and military exercises caused them no surprise; but they were greatly astonished to see apple trees with their apples upon them overhanging the soldiers' tents." "This result," he concludes, "was due not only to the zeal of officers, but more than anything else to the good disposition of the soldiers, which never failed."

William Channing, father of the philanthropist, confides to the same Ezra Stiles, in a letter of August 6, 1780, his delighted surprise: "The French are a fine body of men and appear to be well officered. Neither the officers nor men are the effeminate beings we were heretofore taught to believe them. They are as large and likely men as can be produced by any nation." So much for the brittle, queer-shaped mechanisms.

With the French officers in the West Indies, most of them former companions in arms and personal friends, Rochambeau, as soon as he had landed, began to correspond. The letters thus exchanged, generally unpublished, give a vivid picture of the life then led in the Isles. Cut off from the world most of the time, not knowing what was taking place in France, in America, on the sea, or even sometimes on the neighboring island, unaware of the whereabouts of Rodney, having to guess which place he might try to storm and which they should therefore garrison, these men, suffering from fevers, having now and then their ships scattered by cyclones, played to their credit and with perfect good humor their difficult game of hide and seek.

They send their letters in duplicate and triplicate, by chance boats, give news of the French court when they have any, and learn after a year's delay that their letters of October, 1780, have been duly received by Rochambeau in June, 1781.

The Marquis de Saint-Simon writes from Santo Domingo to say how much he would like to go and fight under Rochambeau on the continent: "I would be delighted to be under your orders, and to give up for that the command-in-chief I enjoy here."

ROCHAMBEAU'S WARM HEART AND STRICT DISCIPLINE

The stanch devotion of Rochambeau to his duties as a soldier, his personal disinterestedness, his cool-headedness and energy as a leader, his good humor in the midst of troubles, had secured for him the devotion of many, while his brusquerie, his peremptoriness, the severity which veiled his real warmth of heart whenever the service was at stake, won him a goodly number of enemies, the latter very generally of less worth as men than the former.

In the affectionate letter by which he made up early differences with "his son Lafayette," shortly after his arrival, he observes, concerning his own military career: "If I have been lucky enough to preserve, up to now, the confidence of the French soldiers, . . . the reason is that out of 15,000 men or thereabout who have been killed or wounded under my orders, of different rank and in the most deadly actions, I have not to reproach myself with having caused a single one to be killed for the sake of my own fame."

"He seemed," Ségur said in his memoirs, "to have been purposely created to understand Washington and be understood by him, and to serve with republicans. A friend of order, of law, and of liberty, his example more even than his authority obliged us scrupulously to respect the rights, properties, and customs of our allies."

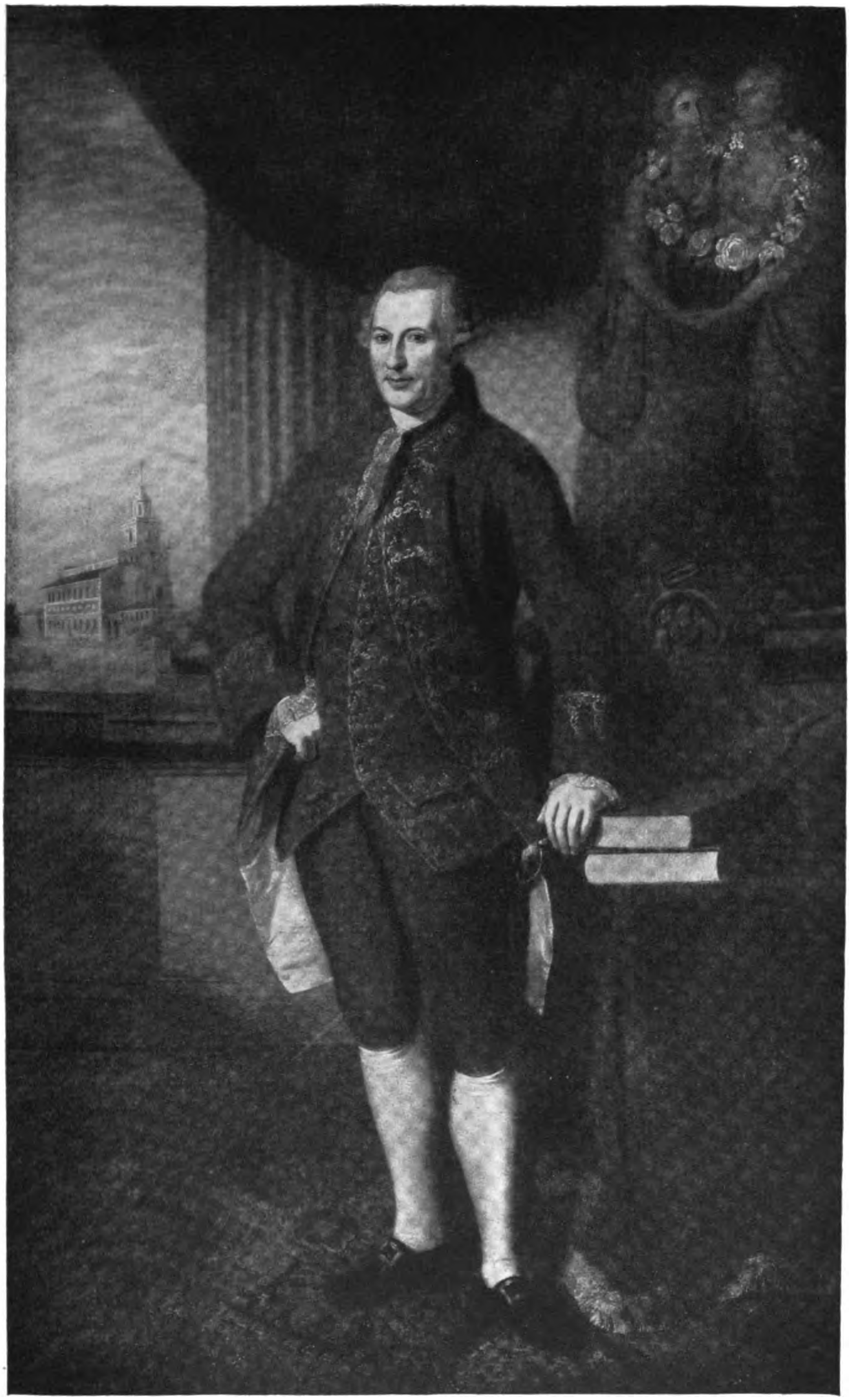
WAITING FOR THE SECOND DIVISION

Nothing without my second division, Rochambeau thought. He had urged the government in his last letters before leaving France to send it not later than a fortnight after he himself had sailed: "The convoy will cross much more safely now under the guard of two warships," he had written to Montbarey, "than it will in a month with an escort of thirty, when the English are ready." And again, after having embarked on the *Duc de Bourgogne:* "For Heaven's sake, sir, hasten that second division. . . . We are just now weighing anchor."

But weeks and months went by and no news came of the second division. Washington with his ardent patriotism, Lafayette with his youthful enthusiasm, were pressing Rochambeau to risk all in order to capture New York, the stronghold of the enemy and chief center of their power. "I am confident," Rochambeau answered, "that our general (Washington) does not want us to give here a second edition of Savannah," and he felt the more anxious that, with the coming of recruits and going of veterans and the short term enlistments, "Washington would command now 15,000 men, now 5,000."

Rochambeau decided in October to send to France his son, then colonel of the regiment of Bourbonnais, to remonstrate. As capture was possible and the envoy might have to throw his dispatches overboard, young Rochambeau, being blessed with youth and a good memory, had learned their contents by heart. One of the best sailors of the fleet had been selected to convey him, on the frigate *Amazone*.

On account of superior forces mount-



Photograph by courtesy of Horace Wells Sellers

THE FIRST FRENCH AMBASSADOR TO THE UNITED STATES: CHEVALIER GERARD

"Whereas the Honorable Sieur Gerard, the first Minister Plenipotentiary to the United States, hath before as well as since their treaty with France uniformly, ably, and zealously promoted the objects of the alliance and welfare of both nations, *Resolved,* That the committee do request Mr. Gerard to sit for his picture before he leaves this city, and that the same be placed in the Council Chamber of the United States." So ran the resolution, adopted in 1779 by the Continental Congress, which resulted in this Peale portrait of one of the first and ablest friends of the American Republic in the days of its infancy.

ing guard outside, the captain waited for the first night storm that should arise, when the watch was sure to be less strict, started in the midst of one, after having waited for eight days, was recognized, but too late, was chased, had his masts broken, repaired them, and reached Brest safely. The sailor who did so well on this occasion and who was to meet a tragic death at Vanikoro, bore the name, famous since, of La Pérouse.

DARK DAYS FOR THE PATRIOT CAUSE

Time wore on—a sad time for the American cause. One day the news was that one of the most trusted generals, famous for his services on land and water — Benedict Arnold — had turned traitor; another day that Gates had been routed at Camden and Kalb killed. In December Ternay died. In January, worse than all, the soldiers of the Pennsylvania line mutinied; unpaid, underfed, kept under the flag long after the time for which they had enlisted, "they went," Closen writes in his journal, "to extremities. In Europe they would not have waited so long."

The danger was great, but brief; tempted by the enemy to change sides and receive full pay, the Pennsylvania line refused indignantly. "We are honest soldiers, asking justice from our compatriots," they answered; "we are not traitors."

Owing to Washington's influence, order soon reigned again; but the alarm had been very great, as shown by the instructions which he handed to Colonel Laurens, now sent by him to Versailles with a mission similar to that of young Rochambeau. The emotion caused by the last events is reflected in them: "The patience of the American army is almost exhausted. . . . The great majority of the inhabitants is still firmly attached to the cause of independence," but that cause may be wrecked if more money, more men, and more ships are not immediately supplied by the French ally.

A SERIOUS SITUATION IN THE SOUTH

While the presence of the American and French troops in the North kept Clinton and his powerful New York garrison immobile where they were, the situation in the South was becoming worse and worse, with Cornwallis at the head of superior forces, Lord Rawdon holding Charleston, and the hated Arnold ravaging Virginia.

Against them the American forces under Greene, Lafayette, and Morgan (who had partly destroyed Tarleton's cavalry at Cowpens, January 17) were doing their utmost, facing fearful odds.

With a handful of men, knowing that the slightest error might be his destruction, young Lafayette, aged twenty-four, far from help and advice, was conducting a campaign in which his pluck, wisdom, and tenacity won him the admiration of veterans. Irritated ever to find him on his path, Cornwallis was writing a little later to Clinton: "If I can get an opportunity to strike a blow at him without loss of time, I will certainly try it." But Lafayette would not let his adversary thus employ his leisure.

One day, however, something would have to be done, and, in order to be ready, Rochambeau kept his army busy with maneuvers, military exercises, sham warfare ("le simulacre de la petite guerre"), and the building of fortifications. As for his officers, he encouraged them to travel, for a large part of the land was free of enemies, and to become better acquainted with these "American brothers," whom they had come to fight for. French officers were thus seen at Boston, Albany, West Point, Philadelphia.

LATIN WAS THE LANGUAGE OF COMMUNICATION

Closen, who, to his joy and surprise, had been made a member of Rochambeau's "family"—that is, had been appointed one of his aides—as soon as his new duties left him some leisure, began, with his methodical mind, to study, he tells us, "the Constitution of the thirteen States and of the Congress of America," meaning, of course, at that date, their several constitutions, which organization, "as time has shown, is well adapted to the national character and has made the happiness of that people so respectable from every point of view." He began after this to examine the products of the soil of Rhode Island, "perhaps one of the prettiest islands on the globe."

The stay being prolonged, the officers began to make acquaintances, to learn English, to gain access to American society. It was at first very difficult; neither French nor American understood each other's language; so recourse was bravely had to Latin, better known then than today.

UNSPEAKABLE QUANTITIES OF TEA ARE DRUNK

For the use of Latin the commander-in-chief of the French army was able to set the example, and Ezra Stiles could talk at a dinner in that language with Rochambeau, still reminiscent of what he had learned when studying for priesthood.

Beginning to know something of the language, our officers risk paying visits and go to teas and dinners. Closen notes with curiosity all he sees: "It is good behavior each time people meet to accost each other, mutually offering the hand and shaking it, English fashion. Arriving in a company of men, one thus goes around, but must remember that it belongs to the one of higher rank to extend his hand first."

Unspeakable quantities of tea are drunk. "To crave mercy, when one has taken half a dozen cups, one must put the spoon across the cup; for so long as you do not place it so, your cup is always taken, rinsed, filled again, and placed before you. After the first, the custom is for the pretty pourer (verseuse)—most of them are so—to ask you: *Is the tea suitable?*" "An insipid drink," grumbles Chaplain Robin, over whom the prettiness of the pourers was powerless.

The toasts are also a very surprising custom, sometimes an uncomfortable one. "One is terribly fatigued by the quantity of healths which are being drunk (*toasts*). From one end of the table to the other a gentleman pledges you, sometimes with only a glance, which means that you should drink a glass of wine with him—a compliment which cannot be politely ignored."

But what strikes him more than anything else is the beauty of those young ladies who made him drink so much tea: "Nature has endowed the ladies of Rhode Island with the handsomest, finest features one can imagine; their complexion is clear and white; their hands and feet usually small."

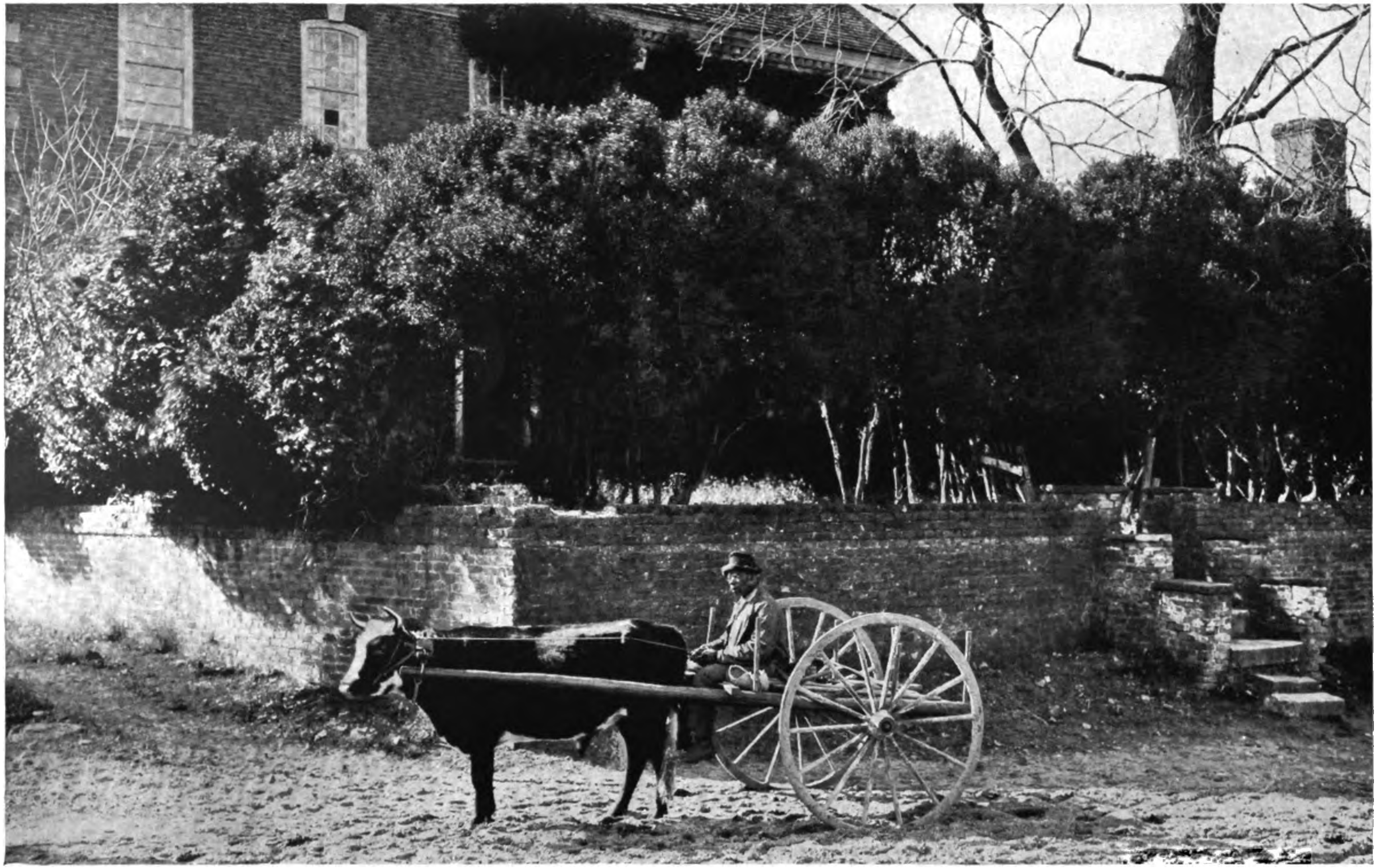
But let not the ladies of other States be tempted to resent this preference. One sees later that in each city he visits young Closen is similarly struck, and that, more considerate than the shepherd Paris, he somehow manages to refuse the apple to none. On the Boston ladies he is quite enthusiastic, on the Philadelphia ones not less; he finds, however, the latter a little too serious, which he attributes to the presence of Congress in that city.

THE FRENCHMEN'S IMPRESSION OF WASHINGTON

But, above all, the object of my compatriots' curiosity was the great man, the one of whom they had heard so much on the other side, the personification of the new-born ideas of liberty and popular government — George Washington. All wanted to see him, and as soon as permission to travel was granted several managed to reach his camp. For all of them, different as they might be in rank and character, the impression was the same and fulfilled expectation, beginning with Rochambeau, who saw him for the first time at the Hartford conferences, in September, 1780, when they tried to draw a first plan for a combined action.

A friendship then commenced between the two that was long to survive those eventful years. "From the moment we began to correspond with one another," Rochambeau wrote in his memoirs, "I never ceased to enjoy the soundness of his judgment and the amenity of his style in a very long correspondence, which is likely not to end before the death of one of us."

Chastellux, who saw him at his camp, where the band of the American army played for him the "March of the Huron," could draw from life his well-known description of him, ending: "Northern America, from Boston to Charleston, is a great book, every page of which tells his praise." Count de Ségur says that he apprehended his ex-



Photograph by H. C. Mann

IN FRONT OF THE THOMAS NELSON HOUSE: YORKTOWN

This was the home of Thomas Nelson, American patriot, Signer of the Declaration of Independence, Governor of Virginia, and Colonel of the Second Virginia Regiment. During the Revolutionary War the credit of the Colonies reached such a low ebb that it was saved from utter ruin only by the voluntary loans and endorsements of individuals. Thomas Nelson was one who thus supported the government, and his last years were spent in near-poverty because most of his property was sold to satisfy the debts he had incurred to pay off the troops of the Virginia line.

pectations could not be equaled by reality, but they were. "His exterior almost told his story. Simplicity, grandeur, dignity, calm, kindness, firmness shone in his physiognomy as well as in his character. He was of a noble and high stature, his expression was gentle and kindly, his smile pleasing, his manners simple without familiarity. . . . All in him announced the hero of a republic."

ABBÉ ROBIN'S TRIBUTE

"I have seen Washington," says Abbé Robin, "the soul and support of one of the greatest revolutions that ever happened. . . . In a country where every individual has a part in supreme authority . . . he has been able to maintain his troops in absolute subordination, render them jealous of his praise, make them fear his very silence." Closen was one day sent with dispatches to the great man, and, like all the others, began to worship him.

As a consequence of this mission, Washington came, on the 6th of March, 1781, to visit the French camp and fleet. He was received with the honors due to a marshal of France; the ships were dressed; the troops, in their best uniforms, "dans la plus grande tenue," lined the streets from Rochambeau's house (the fine Vernon house, still in existence) to the harbor; the roar and smoke of the guns rose in honor of the "hero of liberty." Washington saw Destouches's fleet sail for its Southern expedition and wished it Godspeed; and after a six days' stay, enlivened by "illuminations, dinners, and balls," he left on the 13th.

"I can say," we read in Closen's journal, "that he carried away with him the regrets, the attachment, the respect, and the veneration of all our army." Summing up his impression, he adds: "All in him betokens a great man with an excellent heart. Enough good will never be said of him."

ROCHAMBEAU'S DISAPPOINTMENT

On the 8th of May, 1781, the *Concorde* arrived at Boston, having on board Count de Barras, "a commodore with the red ribbon," of the same family as the future member of the "directoire," and who was to replace Ternay. With him was Viscount Rochambeau, bringing to his father the unwelcome news that no second division was to be expected. "My son has returned very solitary" was the only remonstrance the general sent to the minister.

But the young colonel was able to give, at the same time, news of great importance. A new fleet under Count de Grasse had been got together, and at the time of the *Concorde's* departure had just sailed for the West Indies, so that a temporary domination of the sea might become a possibility. "Nothing without naval supremacy," Rochambeau had written, as we know, in his note-book before starting.

In spite, moreover, of "hard times," wrote Vergennes to La Luzerne, and of the already disquieting state of our finances, a new "gratuitous subsidy of six million livres tournois" was granted to the Americans. Some funds had already been sent to Rochambeau, one million and a half in February, with a letter of Necker, saying: "Be assured, sir, that all that will be asked from the finance department for your army will be made ready on the instant." Seven millions arrived a little later, brought by the *Astrée*, which had crossed the ocean in 67 days without mishap. As for troops, only 600 recruits arrived at Boston, in June, with the *Sagittaire*.

THE QUESTION OF THE HOUR: STORM NEW YORK OR RELIEVE THE SOUTH?

Since nothing more was to be expected, the hour had come for definite decisions. A great effort must now be made—*the* great effort in view of which all the rest had been done, the one which might bring about peace and American liberty or end in lasting failure. All felt the importance and solemnity of the hour. The great question was what should be attempted—the storming of New York or the relief of the South?

The terms of the problem had been amply discussed in letters and conferences between the chiefs, and the discussion still continued. The one who first made up his mind and ceased to hesitate between the respective advantages or disadvantages of the two projects, and who plainly declared that there was but one good plan, which was to reconquer the South—that one, strange to say, was neither Washington nor Rochambeau, and was not in the United States either as a sailor or a soldier, but as a diplomat, and in drawing attention to the fact I am only performing the most agreeable duty toward a justly admired predecessor. This wise adviser was La Luzerne. In an unpublished memoir, drawn up by him on the 20th of April and sent to Rochambeau on May 19, with an explanatory letter, in which he asked that his statement (a copy of which he also sent to Barras) be placed under the eyes of Washington, he insisted on the necessity of immediate action, and action in the Chesapeake:

"It is in the Chesapeake Bay that it seems urgent to convey all the naval forces of the King, with such land forces as the generals will consider appropriate. This change cannot fail to have the most advantageous consequences for the continuation of the campaign," which consequences he points out with singular clear-sightedness, adding:

ADVANTAGES OF A SOUTHERN OFFENSIVE

"If the English follow us and can reach the bay only after us, their situation will prove very different from ours; all the coasts and the inland parts of the country are full of their enemies. They have neither the means nor the time to raise, as at New York, the necessary works to protect themselves against the inroads of the American troops and to save themselves from the danger to which the arrival of superior forces would expose them." If the plan submitted by him offers difficulties, others should then be formed; but he maintains that "all those which have for their object the relief of the Southern States must be preferred, and that no time should be lost to put them in execution."

At the Weathersfield conference, near Hartford, Conn., between the Americans and French, on the 23d of May (in the Webb house, still in existence), Washington still evinced, and not without some weighty reasons, his preference for an attack on New York. He spoke of the advanced season, of "the great waste of men which we have found from experience in long marches in the Southern States," of the "difficulty of transports by land"; all those reasons and some others, "too well known to Count de Rochambeau to need repeating, show that an operation against New York should be preferred, in the present circumstances, to the effort of a sending of troops to the South." On the same day he was writing to La Luzerne: "I should be wanting in respect and confidence were I not to add that our object is New York."

TO VIRGINIA'S RESCUE

La Luzerne, however, kept on insisting. To Rochambeau he wrote on the 1st of June: "The situation of the Southern States becomes every moment more critical; it has even become very dangerous, and every measure that could be taken for their relief would be of infinite advantage. . . . The situation of the Marquis de Lafayette and that of General Greene is most embarrassing, since Lord Cornwallis has joined the English division of the Chesapeake. If Virginia is not helped in time, the English will have reached the goal which they have assigned to themselves in the bold movements attempted by them in the South; they will soon have really conquered the Southern States. . . .

"I am going to write to M. de Grasse as you want me to do; on your side, seize every occasion to write to him, and multiply the copies of the letters you send him"—that is, in duplicate and triplicate for fear of loss or capture. "His coming to the rescue of the oppressed States is not simply desirable; the thing seems to be now of the most pressing necessity." He must not only come, but bring with him all he can find of French troops in our isles; thus would be compensated, to a certain extent, the absence of the second division.

THE FATE OF THE UNITED STATES HANGS ON DE GRASSE

Rochambeau soon agreed, and, with his usual wisdom, Washington was not long in doing the same. On the 28th of

May the French general had already written to de Grasse, beseeching him to come with every means at his disposal, to bring his whole fleet, and not only his fleet, but a supply of money, to be borrowed in our colonies, and also all the French land forces from our garrisons which he could muster. The desire of Saint-Simon to come and help had, of course, not been forgotten by Rochambeau, and he counted on his good will.

After having described the extreme importance of the effort to be attempted, he concluded: "The crisis through which America is passing at this moment is of the severest. The coming of Count de Grasse may be salvation" (see page 541).

Events had so shaped themselves that the fate of the United States and the destinies of more than one nation would be for a few weeks in the hands of one man, and one greatly hampered by imperative instructions obliging him, at a time when there was no steam to command the wind and waves, to be at a fixed date in the West Indies, owing to certain arrangements with Spain.

Would he take the risk, and what would be the answer of that temporary arbiter of future events, François Joseph Paul Comte de Grasse, a sailor from the age of twelve, now a lieutenant general and "chef d'escadre," who had seen already much service on every sea, in the East and West Indies, with d'Orvilliers at Ushant, with Guichen against Rodney in the Caribbean Sea, a haughty man, it was said, with some friends and many enemies, the one quality of his acknowledged by friend and foe being valor? "Our admiral," his sailors were wont to say, "is six foot tall on ordinary days and six foot six on battle days."

READY FOR A FIGHT OR A FROLIC

What would he do and say? People in those times had to take their chance and act in accordance with probabilities. This Washington and Rochambeau did. By the beginning of June all was astir in the northern camp. Soldiers did not know what was contemplated, but obviously it was something great. Young officers exulted. What joy to have at last the prospect of an "active campaign," wrote Closen in his journal, "and to have an occasion to visit other provinces and see the differences in manners, customs, products, and trade of our good Americans!"

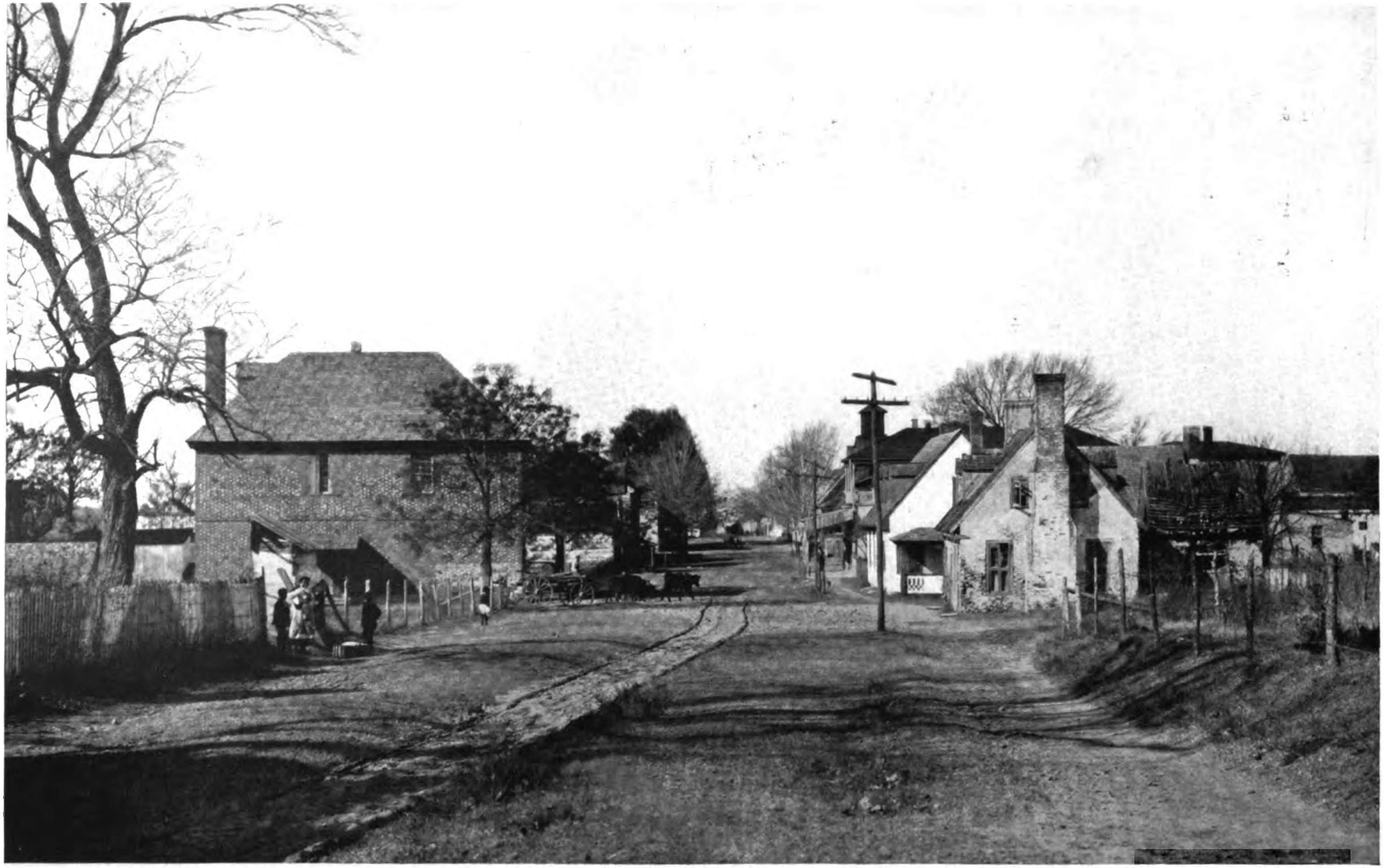
The camp is raised and the armies are on the move toward New York and the South; they are in the best dispositions, ready, according to circumstances, to fight or admire all that turns up. "The country between Providence and Bristol," says Closen, "is charming. We thought we had been transported into Paradise, all the roads being lined with acacias in full bloom, filling the air with a delicious, almost too strong, fragrance." Steeples are climbed, and "the sight is one of the finest possible." Snakes are somewhat troublesome, but such things will happen, even in Paradise.

The heat becomes very great, and night marches are arranged, beginning at two o'clock in the morning; roads at times become muddy paths, where wagons, artillery, carts conveying boats for the crossing of rivers cause great trouble and delay. "French gayety remains ever present in these hard marches. The Americans, whom curiosity brings by the thousand to our camps, are received," Abbé Robin writes, "with lively joy; we cause our military instruments to play for them, of which they are passionately fond. Officers and soldiers, then, American men and women mix and dance together; it is the feast of equality; the first-fruits of the alliance which must prevail between those nations. . . . These people are still in the happy period when distinctions of rank and birth are ignored; they treat alike the soldier and the officer, and often ask the latter what is his profession in his country, unable as they are to imagine that that of a warrior may be a fixed and permanent one."

WASHINGTON WARNS OF SPIES

Washington writes to recommend precautions against spies, who will be sent to the French camp, dressed as peasants, bringing fruit and other provisions, and who "will be attentive to every word which they may hear drop."

Several officers, for the sake of example, discard their horses and walk, indifferent to mud and heat; some of them,



Photograph by H. C. Mann

THE MAIN STREET OF YORKTOWN IS TODAY JUST AS IT WAS WHEN WASHINGTON, ROCHAMBEAU, AND LAFAYETTE WERE THERE

Tradition and the journals of several American officers relate that the first shot from the American battery against the troops of Lord Cornwallis at the siege of Yorktown was fired by General Washington himself. It was this little Virginia village that saw the beginning of the triumphant end of the Revolutionary War.

like the Viscount de Noailles, performing on foot the whole distance of 756 miles between Newport and Yorktown. Cases of sickness were rare.

On the 6th of July the junction of the two armies took place at Phillipsburg, "three leagues," Rochambeau writes, "from Kingsbridge, the first post of the enemy in the island of New York," the American army having followed the left bank of the Hudson in order to reach the place of meeting.

On the receipt of the news Lord Germain, the British colonial secretary, wrote to Clinton, who commanded in chief at New York: "The junction of the French troops with the Americans will, I am persuaded, soon produce disagreements and discontents, and Mr. Washington will find it necessary to separate them very speedily, either by detaching the Americans to the southward or suffering the French to return to Rhode Island. . . . But I trust before that can happen Lord Cornwallis will have given the loyal inhabitants on both sides of the Chesapeake the opportunity they have so long ago earnestly desired, of avowing their principles and standing forth in support of the King's measures."

Similar proofs of my lord's acumen abound in his partly unpublished correspondence. He goes on rejoicing and deducting all the happy consequences which were sure to result from the meeting of the French and American troops, so blandly elated at the prospect as to remind any one familiar with La Fontaine's fables, of Perrette and her milk-pot.

Washington, in the meantime, was reviewing the French troops (July 9) and Rochambeau the American ones, and—a fact which would have greatly surprised Lord Germain—the worse equipped the latter were, the greater the sympathy and admiration among the French for their endurance.

THE PATIENT CONTINENTAL SOLDIERS

"Those brave people," wrote Closen, "it really pained us to see, almost naked, with mere linen vests and trousers, most of them without stockings; but, would you believe it? looking very healthy and in the best of spirits." And further on: "I am full of admiration for the American troops. It is unbelievable that troops composed of men of all ages, even of children of fifteen, of blacks and whites, all nearly naked, without money, poorly fed, should walk so well and stand the enemy's fire with such firmness. The calmness of mind and the clever combinations of General Washington, in whom I discover every day new eminent qualities, are already enough known, and the whole universe respects and admires him. Certain it is that he is admirable at the head of his army, every member of which considers him as his friend and father."

These sentiments, which were unanimous in the French army, assuredly did not betoken the clash counted upon by the English colonial secretary, and more than one of our officers who had a few years later to take part in another revolution must have been reminded of the Continental soldiers of '81 as they led to battle, fighting for a similar cause, our volunteers of '92.

FRANCE FOUGHT FOR AN IDEA

No real hatred, any more than before, appeared among the French troops for those enemies whom they were now nearing, and with whom they had already had some sanguinary skirmishes. During the intervals between military operations relations were courteous and at times amicable. The English gave to the French news of Europe, even when the news was good for the latter, and passed to them newspapers. "We learned that news" (Necker's resignation), writes Blanchard, "through the English, who often sent trumpeters and passed gazettes to us. We learned from the same papers that Mr. de La Motte-Picquet had captured a rich convoy.

"These exchanges between the English and us did not please the Americans, nor even General Washington, who were unaccustomed to this kind of warfare." The fight was really for an idea, but, what might have dispelled any misgivings, with no possibility of a change of idea.

Two unknown factors now were for the generals the cause of deep concern. What would de Grasse do? What would

Clinton do? The wounded officer of Johannisberg, the winner of Charleston, Sir Henry Clinton, a lieutenant general and former member of Parliament, enjoying great repute, was holding New York, not yet the second city of the world nor even the first of the United States, covering only with its modest houses, churches, and gardens the lower part of Manhattan, and reduced, owing to the war, to 10,000 inhabitants.

But, posted there, the English commander threatened the road on which the combined armies had to move. He had at his disposal immense stores, strong fortifications, a powerful fleet to second his movements, and troops equal in number and training to ours.

There are periods in the history of nations when, after a continuous series of misfortunes, when despair would have seemed excusable, suddenly the sky clears and everything turns their way. In the War of American Independence such a period had begun. The armies of Washington and Rochambeau, encumbered with their carts, wagons, and artillery, had to pass rivers, to cross hilly regions, to follow muddy tracks; any serious attempt against them might have proved fatal; but nothing was tried. It was of the greatest importance that Clinton should, as long as possible, have no intimation of the real plans of the Franco-Americans; everything helped to mislead him—his natural disposition as well as circumstances.

CLINTON'S FATAL ERROR

He had an unshakable conviction that the key to the whole situation was New York, and that the royal power in America, and he, too, Lieut. Gen. Sir Henry Clinton, would stand or fall with that city. Hence his disinclination to leave it and to attempt anything outside. His instructions ordered him to help Cornwallis to his utmost, the plan of the British court being to conquer the Southern States first, and then continue the conquest northward. But he, on the contrary, was day after day asking Cornwallis to send back some of his troops.

A great source of light, and, as it turned out, of darkness also, was the intercepting of letters. This constantly happened in those days, to the benefit or bewilderment of both parties, on land or at sea. But luck had decidedly turned, and the stars shone propitious for the allies. We captured valuable letters, and Clinton misleading ones.

On the 18th of August the two armies raised their camps, disappeared, and, following unusual roads, moving northward at first for three marches, reached in the midst of great difficulties, under a torrid heat, greatly encumbered with heavy baggage, the Hudson River and crossed it at King's Ferry, without being more interfered with than before.

How can such an inaction on the part of Clinton be explained? "It is for me," writes Count Guillaume de Deux-Ponts in his journal, the manuscript of which was found on the quays in Paris and printed in America, "an undecipherable enigma, and I hope I shall never be reproached for having puzzled people with any similar ones."

The river once crossed, the double army moved southward by forced marches. Rochambeau, in order to hasten the move, prescribed the leaving behind of a quantity of effects; and this, says Closen, "caused considerable grumbling among the line," which grumbled, but marched.

The news, to be sure, of so important a movement came to Clinton; but, since the stars had ceased to smile on him, he chose to conclude, as he wrote to Lord Germain on the 7th of September, "this to be a feint." When he discovered that it was not "a feint" the Franco-American army was beyond reach. "What can be said as to this?" Closen writes merrily. "Try to see better another time," and he draws a pair of spectacles on the margin of his journal.

PHILADELPHIA'S WELCOME

The march southward thus continued unhampered. They crossed first the Jerseys, "a land of Cockayne, for game, fish, vegetables, poultry." Closen had the happiness to "hear from the lips of General Washington, and on the ground itself, a description of the dispositions taken, the movements and all the incidents of the famous battles of Trenton and Princeton." The young man, who had made great progress in English, was now used by the two generals as their interpreter; so nothing escaped him.

The reception at Philadelphia was triumphal; Congress was most courteous; toasts were innumerable. The city is an immense one, "with seventy-two streets in a straight line. . . . Shops abound in all kinds of merchandise, and some of them do not yield to the Petit Dunkerque in Paris." Women are very pretty, "of charming manners, and very well dressed, even in French fashion." Benezet, the French Quaker, one of the celebrities of the city, is found to be full of wisdom, and La Luzerne, "who keeps a state worthy of his sovereign," gives a dinner to one hundred and eighty guests.

From Philadelphia to Chester, on the 5th of September, Rochambeau and his aides took a boat. As they were nearing the latter city, "we saw in the distance," says Closen, "General Washington shaking his hat and a white handkerchief, and showing signs of great joy."

GREAT NEWS! DE GRASSE HAD COME!

Rochambeau had scarcely landed when Washington, usually so cool and composed, fell into his arms; the great news had arrived; de Grasse had come, and while Cornwallis was on the defensive at Yorktown, the French fleet was barring the Chesapeake.

On the receipt of letters from Washington, Rochambeau, and La Luzerne, telling him to what extent the fate of the United States was in his hands, the sailor, having "learned, with much sorrow," he wrote to the latter, "what was the distress of the continent, and the need there was of immediate help," had decided that he would leave nothing undone to usefully take part in the supreme effort which, without his help, might be attempted in vain.

Having left, on the 5th of August, Cap Français (today Cap Haïtien), he had added to his fleet all the available ships he could find in our isles, including some which, having been years away, had received orders to go back to France for repairs. He had had great difficulty in obtaining the money asked for, although he had offered to mortgage for it his Castle of Tilly, and the Chevalier de Charitte, in command of the *Bourgogne,* had made a like offer. But at last, thanks to the Spanish governor at Havana, he had secured the desired amount of twelve hundred thousand francs. He was bringing, moreover, the Marquis de Saint-Simon, with the 3,000 regular troops under his command.

De Grasse's only request was that operations be pushed on with the utmost rapidity, as he was bound to be back at the Isles at a fixed date.

AMERICA'S DEBT TO DE GRASSE

It can truly be said that no single man risked nor did more for the United States than de Grasse, the single one of the leaders to whom no memorial has been dedicated.

The news spread like wild-fire; the camp was merry with songs and shouts; in Philadelphia the joy was indescribable; crowds pressed before the house of La Luzerne, cheering him and his country, while in the streets impromptu orators, standing on chairs, delivered mock funeral orations on the Earl of Cornwallis. "You have," Rochambeau wrote to the admiral, "spread universal joy throughout America, with which she is wild."

Anxiety was renewed, however, when it was learned shortly after that the French men-of-war had left the Chesapeake, the entrance to which now remained free. The English fleet, of twenty ships and seven frigates, under Hood and Graves, the same Graves who had failed to intercept Rochambeau's convoy, had been signaled on the 5th of September, and de Grasse, leaving behind him, in order to go faster, some of his ships and a number of sailors who were busy on land, had weighed anchor, three-quarters of an hour after sighting the signals, to risk the fight upon which the issue of the campaign and, as it turned out, of the war was to depend. "This behavior of Count de Grasse," wrote the famous Tarleton, is "worthy of admiration."

Six days later the French admiral was back; he had had 21 officers and 200

Photograph by E. P. Griffith

ROCHAMBEAU'S HEADQUARTERS IN 1782: WILLIAM AND MARY COLLEGE AT WILLIAMSBURG, VIRGINIA (PAGE 545)

Only to Harvard does this venerable college yield the precedence of seniority among American institutions of learning. King William and Queen Mary granted its charter in 1693, and the chief source of its income during the three-quarters of a century before the Revolutionary War was the tax of a penny a pound on all tobacco exported, together with the profits from the office of the Surveyor General of the State. Jefferson and Monroe and Chief Justice John Marshall were students here, and the Phi Beta Kappa Fraternity was founded under its roof in the same year that the Declaration of Independence was signed.

sailors killed or wounded, but he had lost no ship, and the enemy's fleet, very much damaged, with 336 men killed or disabled, and having lost the *Terrible,* of 74 guns, and the frigates *Iris* and *Richmond* of 40, had been compelled to retreat to New York. Admiral Robert Digby thereupon arrived with naval reinforcements; "yet I do not think," La Luzerne wrote to Rochambeau, "that battle will be offered again. If it is, I am not anxious about the result." Nothing was attempted. This "superiority at sea," Tarleton wrote in his *History of the Campaigns,* "proved the strength of the enemies of Great Britain, deranged the plans of her generals, disheartened the courage of her friends, and finally confirmed the independency of America." "Nothing," Rochambeau had written in his note-book at starting, "without naval supremacy."

ANOTHER FRENCH FLEET IN THE CHESAPEAKE

On reëntering the bay, de Grasse had the pleasure to find there another French fleet, that of his friend Barras. As a lieutenant general, de Grasse outranked him, but as a "chef d'escadre" Barras was his senior officer, which might have caused difficulties; the latter could be tempted, and he was, to conduct a campaign apart, so as to personally reap the glory of possible successes.

"I leave it to thee, my dear Barras," de Grasse had written him on the 28th of July, "to come and join me or to act on thy own account for the good of the common cause. Do only let me know, so that we do not hamper each other unawares."

Barras preferred the service of the cause to his own interest; leaving Newport, going far out on the high seas, then dashing south at a great distance from the coast, he escaped the English and reached the Chesapeake, bringing the heavy siege artillery now indispensable for the last operations. The stars had continued incredibly propitious.

The well-known double siege now began—that of Yorktown by Washington and Rochambeau, and that of Gloucester, on the opposite side of the river, which might have afforded a place of retreat to Cornwallis. De Grasse had consented to land, in view of the latter, 800 men under Choisy, whom Lauzun joined with his legion, and both acted in conjunction with the American militia under Weedon.

The two chiefs on the Yorktown side were careful to conduct the operations according to rules, "on account," says Closen, "of the reputation of Cornwallis and the strength of the garrison." Such rules were certainly familiar to Rochambeau, whose fifteenth siege this one was.

THE SURRENDER

From day to day Cornwallis was more narrowly pressed. As late as the 29th of September he was still full of hope. "I have ventured these two days," he wrote to Clinton, "to look General Washington's whole force in the face in the position on the outside of my works; and I have the pleasure to assure Your Excellency that there was but one wish throughout the whole army, which was that the enemy would advance."

A dozen days later the tone was very different. "I have only to repeat that nothing but a direct move to York River, which includes a successful naval action, can save me; . . . many of our works are considerably damaged."

Lord Germain was, in the meantime, writing to Clinton in his happiest mood, on the 12th of October: "It is a great satisfaction to me to find . . . that the plan you had concerted for conducting the military operations in that quarter (the Chesapeake) corresponds with what I had suggested."

The court, which had no more misgivings than Lord Germain himself, had caused to sail with Digby no less a personage than Prince William, one of the fifteen children of George III, and eventually one of his successors as William IV; but his presence could only prove one more encumbrance.

After the familiar incidents of the siege, in which the American and French armies displayed similar valor and met with about the same losses, the decisive move of the night attack on the enemy's advanced redoubts had to be made—one of the redoubts to be stormed by the Americans with Lafayette and the other by the French under Viomesnil.

On the 19th of October, after a loss of less than 300 men in each of the besieging armies, an act was signed as great in its consequences as any that ever followed the bloodiest battles, the capitulation of Yorktown. It was in a way the ratification of that other act which had been proposed for signature five years before at Philadelphia by men whose fate had more than once in the interval seemed desperate—the Declaration of Independence.

On the same day Closen writes: "The York garrison marched past at two o'clock, before the combined army, which was formed in two lines, the French facing the Americans and in full dress uniform. . . . Passing between the two armies, the English showed much disdain for the Americans, who, so far as dress and appearances went, represented the seamy side, many of those poor boys being garbed in linen *habits-vestes,* torn, soiled, a number among them almost shoeless. The English had given them the nickname of *Yanckey-Dudle.*

"What does it matter? the man of sense will think; they are the more to be praised and show the greater valor, fighting, as they do, so badly equipped." As a "man of sense," Rochambeau writes in his memoirs: "This justice must be rendered to the Americans, that they behaved with a zeal, a courage, an emulation, which left them in no case behind, in all that part of the siege intrusted to them, in spite of their being unaccustomed to sieges."

YORKTOWN'S PITIFUL ASPECT

The city offered a pitiful sight. "I shall never forget," says Closen, "how horrible and painful to behold was the aspect of the town of York. . . . One could not walk three steps without finding big holes made by bombs, cannon-balls, splinters, barely covered graves, arms and legs of blacks and whites scattered here and there, most of the houses riddled with shot and devoid of window panes. . . . We found Lord Cornwallis in his house. His attitude evinced the nobility of his soul, his magnanimity and firmness of character. He seemed to say: I have nothing to reproach myself with; I have done my duty and defended myself to the utmost." This impression of Lord Cornwallis was general.

As to Closen's description of the town, now so quiet and almost asleep by the blue water, amid her sand-dunes, once more torn and blood-stained during the Civil War, resting at the foot of the great marble memorial raised a hundred years later by Congress, it is confirmed by Abbé Robin, who notices, too, "the quantity of human limbs which infected the air," but also, being an abbé, the number of books scattered among the ruins, many being works of piety and theological controversy.

A GENEROUS VICTOR

Nothing better puts in its true light the dominant characteristics of the French sentiment throughout the war than what happened on this solemn occasion, and more shows how, with their new-born enthusiasm for philanthropy and liberty, the French were pro-Americans much more than anti-English. No trace of a triumphant attitude toward a vanquished enemy appeared in anything they did or said. Even in the surrendering the fact remained apparent that this was not a war of hatred.

"The English," writes Abbé Robin, "laid down their arms at the place selected. Care was taken not to admit sightseers, so as to diminish their humiliation." Henry Lee (Lighthorse Harry), who was present, describes in the same spirit the march past: "Universal silence was observed amidst the vast concourse, and the utmost decency prevailed, exhibiting in demeanor an awful sense of the vicissitudes of human life, mingled with commiseration for the unhappy."

The victors pitied Cornwallis and showed him every consideration; Rochambeau, learning that he was without money, lent him all he wanted.

CORNWALLIS'S TRIBUTE TO THE FRENCH

Cornwallis realized quite well that the French had fought for a cause dear to their hearts more than from any desire to humble him or his nation. He publicly rendered full justice to the enemy, acknowledging that the fairest treatment had been awarded him by them. In the final report, in which he gives his own account of the catastrophe and which he caused to be printed when he reached England, he said:

"The kindness and attention that has been shown us by the French officers, . . . their delicate sensibility of our situation, their generous and pressing offers of money, both public and private, to any amount, has really gone beyond what I can possibly describe and will, I hope, make an impression on the breast of every British officer whenever the fortunes of war should put any of them in our power."

The French attitude in the New World was in perfect accord with the French sentiments in the Old. On receiving from Lauzun and Count de Deux-Ponts, who for fear of capture had sailed in two different frigates, the news of the taking of Cornwallis, of his 8,000 men (of whom 2,000 were in hospitals), 800 sailors, 214 guns, and 22 flags, the King wrote to Rochambeau: "Monsieur le Comte de Rochambeau, the success of my arms flatters me only as being conducive to peace."

THE BEGINNING OF A NEW POLITICAL ERA

One of the most authoritative publicists of the day, Lacretelle, in 1785, considering, in the *Mercure de France,* the future of the new-born United States, praised the favorable influence exercised on them by the so much admired British Constitution—"the most wonderful government in Europe. For it will be England's glory to have created peoples worthy of throwing off her yoke, even though she must endure the reproach of having forced them to independence by forgetfulness of her own maxims."

As to the members of the French army who had started for the new crusade two years before, they had at once the conviction that, in accordance with their anticipation, they had witnessed something great which would leave a profound trace in the history of the world. They brought home the seed of liberty and equality, the "virus," as it was called by Pontgibaud, who, friend as he was of Lafayette, resisted the current to the last and remained a royalist.

Youthful Saint-Simon, the future Saint-Simonian, thus summed up his impressions of the campaign: "I felt that the American Revolution marked the beginning of a new political era; that this revolution would necessarily set moving an important progress in general civilization, and that it would before long occasion great changes in the social order then existing in Europe."

ROCHAMBEAU VISITS JEFFERSON

For one year more Rochambeau remained in America. Peace was a possibility, not a certainty.

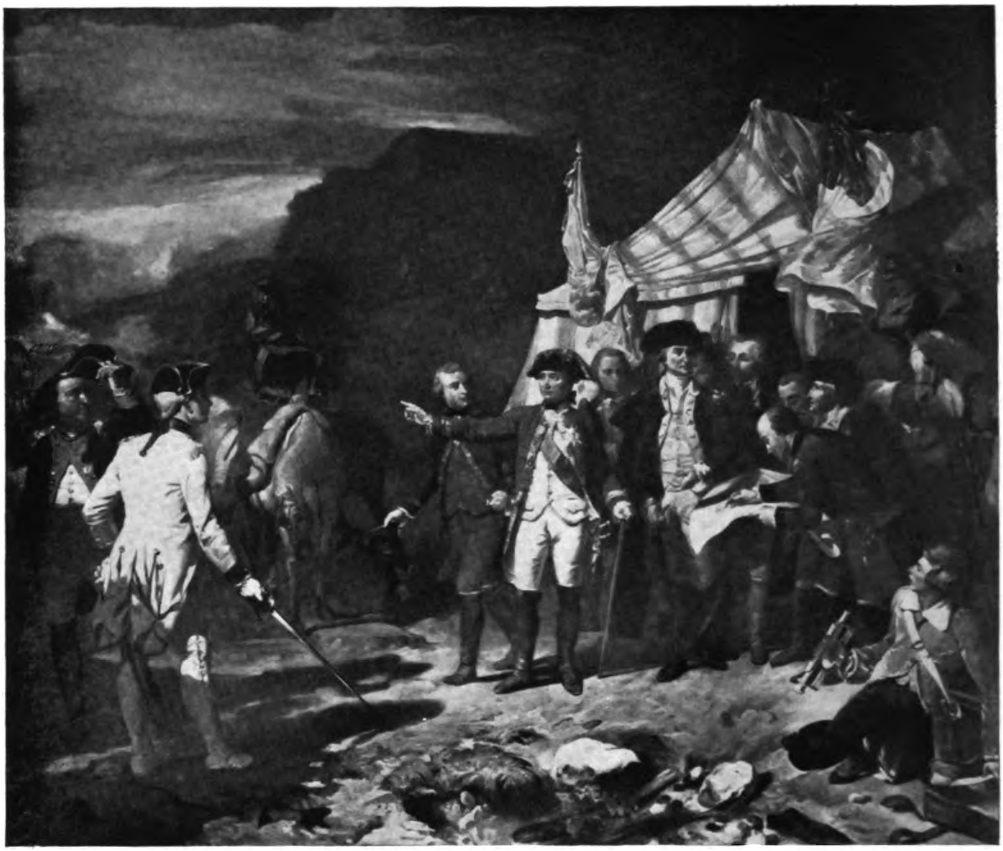
Rochambeau had established himself at Williamsburg, the quiet and dignified capital of the then immense State of Virginia, noted for its "Bruton Church," its old College of William and Mary, designed by Sir Christopher Wren, and the birthplace of the far-famed Phi Beta Kappa fraternity; its statue of the former English governor, Lord Botetourt, in conspicuous marble wig and court mantle. "America, behold your friend," the inscription on the pedestal reads.

That other friend of America, Rochambeau, took up his quarters in the college, one of the buildings of which, used as a hospital for our troops, accidentally took fire, but was at once paid for by the French commander.

Rochambeau, his son, and two aides, one of whom was Closen, journey to visit at Monticello the already famous Jefferson. They take with them 14 horses, sleep in the houses where they chance to be at nightfall—a surprise party which may, at times, have caused embarrassment; but this accorded with the customs of the day.

The hospitality is, according to occasions, brilliant or wretched, "with a bed for the general as ornamented as the canopy for a procession," and elsewhere "with rats which come and tickle our ears." They reach the handsome house of the "Philosopher," adorned with a colonnade, "the platform of which is very prettily fitted with all sorts of mythological scenes."

The lord of the place dazzles his visitors by his encyclopædic knowledge. Closen describes him as "very learned in



From a painting by Couder

THE SURRENDER OF CORNWALLIS AT YORKTOWN

General Washington stands between Rochambeau and Lafayette. The original painting hangs in the Gallery of Battles at Versailles, but a copy in oils is one of the art treasures of the French embassy in Washington.

belles-lettres, in history, in geography, etc., being better versed than any in the statistics of America in general and the interests of each particular province—trade, agriculture, soil, products; in a word, all that is of greatest use to know. The least detail of the wars here since the beginning of the troubles is familiar to him. He speaks all the chief languages to perfection, and his library is well chosen, and even rather large, in spite of a visit paid to the place by a detachment of Tarleton's legion, which has proved costly and has greatly frightened his family."

MANY MEMORIALS ARE PRESENTED TO THE FRENCH COMMANDER

Numerous addresses expressing fervent gratitude were received by Rochambeau from Congress, from the legislatures of the various States, from the universities, from the mayor and inhabitants of Williamsburg, the latter offering their thanks not only for the services rendered by the general in his "military capacity," but, they said, "for your conduct in the more private walks of life, and the happiness we have derived from the social, polite, and very friendly intercourse we have been honored with by yourself and the officers of the French army in general, during the whole time of your residence among us."

The favorable impression left by an army permeated with the growing humanitarian spirit is especially mentioned in several of those addresses: "May Heaven," wrote "the Governor, council, and representatives of the State of Rhode Island and Providence Plantations in General Assembly convened," "reward your exertions in the cause of humanity and the particular regard you have paid to the rights of the citizens."

PREJUDICES 300 YEARS OLD DESTROYED IN 3 YEARS

Writing at the moment when departure was imminent, the Maryland Assembly recalled in its address the extraordinary prejudices prevailing shortly before in America against all that was French:

"To preserve in troops far removed from their own country the strictest discipline and *to convert into esteem and affection deep and ancient prejudices* was reserved for you. . . . We view with regret the departure of troops which have so conducted, so endeared, and so distinguished themselves, and we pray that the laurels they have gathered before Yorktown may never fade, and that victory, to whatever quarter of the globe they direct their arms, may follow their standard."

The important result of a change in American sentiment toward the French, apart from the military service rendered by them, was confirmed to Rochambeau by La Luzerne, who wrote him: "Your well-behaved and brave army has not only contributed to put an end to the success of the English in this country, but has destroyed in three years prejudices deep-rooted for three centuries."

The "President and professors of the University of William and Mary," using a style which was to become habitual in France but a few years later, desired to address Rochambeau, "not in the prostituted language of fashionable flattery, but with the voice of truth and republican sincerity," and, after thanks for the services rendered and the payment made for the building destroyed "by an accident that often eludes all possible precaution," they adverted to the future intellectual intercourse between the two nations, saying: "Among the many substantial advantages which this country hath already derived and which must ever continue to flow from its connection with France, we are persuaded that the improvement of useful knowledge will not be the least. A number of distinguished characters in your army afford us the happiest presage that science, as well as liberty, will acquire vigor from the fostering hand of your nation."

They concluded: "You have reaped the noblest laurels that victory can bestow, and it is perhaps not an inferior triumph to have obtained the sincere affection of a grateful people."

THE FRENCH ARMY RETURNS TO PROVIDENCE

As the summer of 1782 was drawing near, the French army, which had wintered in Virginia, moved northward in view of possible operations.

On the 14th of August Washington and Rochambeau were again together, in the vicinity of the North River, and the American troops were again reviewed by the French general. They are no longer in tatters, but well dressed and have a fine appearance; their bearing, their maneuvers are perfect; the commander-in-chief, "who causes his drums," Rochambeau relates, "to beat the French march," is delighted to show his soldiers to advantage; everybody compliments him.

During his stay at Providence, in the course of his journey north, Rochambeau gave numerous fêtes, a charming picture of which, as well as of the American society attending them, is furnished us by Ségur: "Mr. de Rochambeau, desirous to the very last of proving by the details of his conduct, as well as by the great services he had rendered, how much he wished to keep the affection of the Americans and to carry away their regrets, gave in the city of Providence frequent assemblies and numerous balls, to which people flocked from ten leagues around.

"I do not remember to have seen gathered together in any other spot more gayety and less confusion, more pretty women and more happily married couples, more grace and less coquetry, a more complete mingling of persons of all classes, between whom an equal decency allowed no untoward difference to be seen. That decency, that order, that wise liberty, that felicity of the new Republic, so ripe from its very cradle, were the continual subject of my surprise and the object of my frequent talks with the Chevalier de Chastellux."

ALL FRANCE HONORS ROCHAMBEAU ON HIS RETURN

In the autumn of 1782 a general parting took place, Rochambeau returning to France.

The King, the ministers, the whole country, gave Rochambeau the welcome he deserved. At his first audience on his return he had asked Louis XVI, as being his chief request, permission to divide the praise bestowed on him with the unfortunate de Grasse, now a prisoner of the English after the battle of the Saintes. where, fighting 30 against 37, he had lost seven ships, including the *Ville de Paris* (which had 400 dead and 500 wounded), all so damaged by the most furious resistance that, owing to grounding, to sinking, or to fire, not one reached the English waters. Rochambeau received the blue ribbon of the Holy Ghost, was appointed governor of Picardy, and a few years later became a marshal of France.

Rochambeau was keeping up with Washington a most affectionate correspondence, still partly unpublished, the great American often reminding him of his "friendship and love" for his "companions in war." Dreaming of a humanity less agitated than that he had known, dreaming dreams which were not to be soon realized, he was writing to Rochambeau, from Mount Vernon, on September 7, 1785: "Although it is against the profession of arms, I wish to see all the world at peace."

The French Revolution found Rochambeau still an officer in the French army, defending the frontier as a marshal of France and commander-in-chief of the northern troops. In 1792 he definitely withdrew to his estate, barely escaping with his life during the Terror. A striking and touching thing it is to note that when a prisoner in that "horrible sepulchre," the Conciergerie, he appealed to the "Citizen President of the Revolutionary Tribunal" and invoked as a safeguard the great name of Washington, "my colleague and my friend in the war we made together for the liberty of America." Luckier than many of his companions in arms of the American war—than Lauzun, Custine, d'Estaing, Broglie, Dillon, and others—Rochambeau escaped the scaffold.

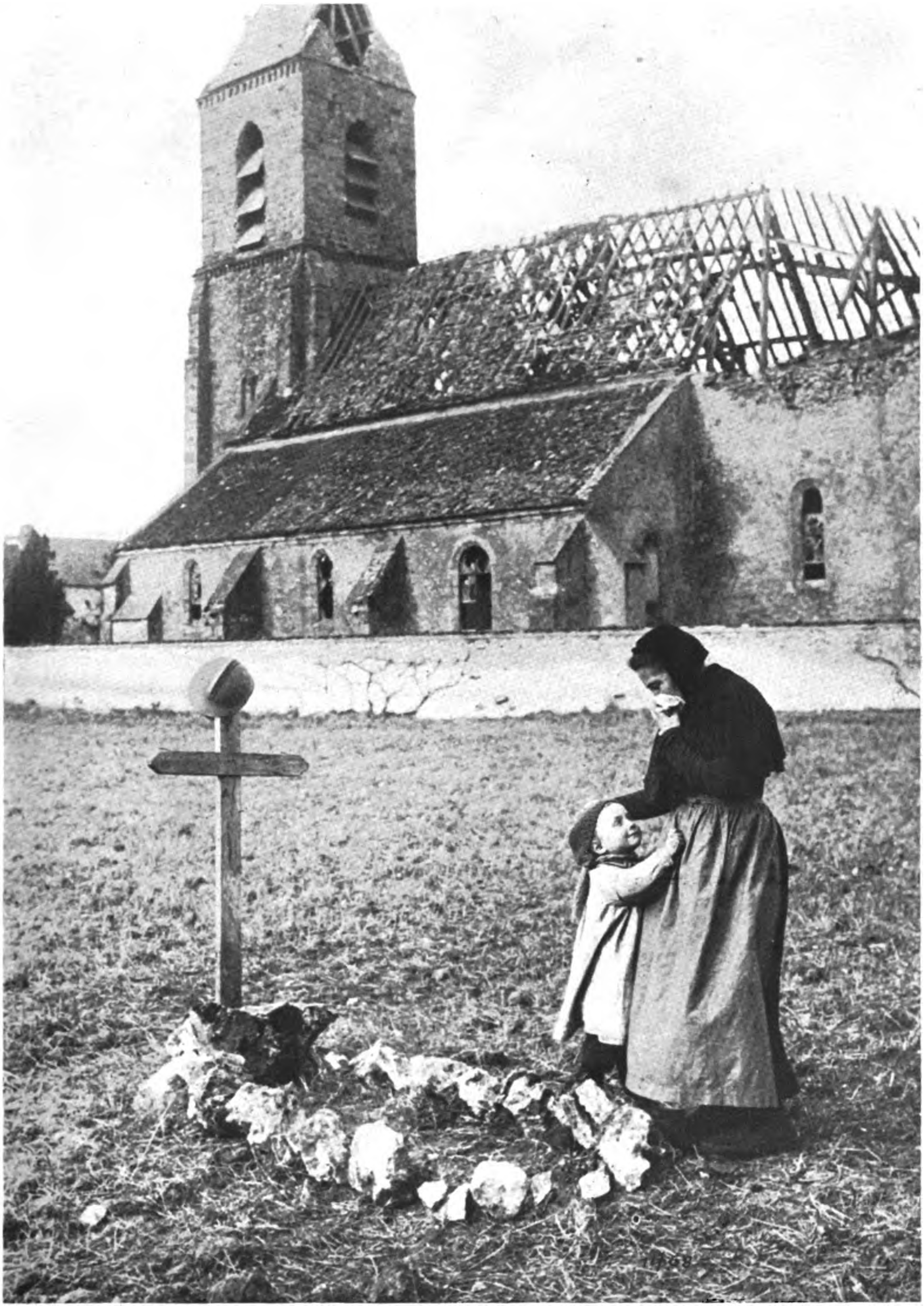
THE EQUILIBRIUM OF THE WORLD HAS BEEN ALTERED

Visiting some years ago the place and the tomb and standing beside the grave of the marshal, it occurred to me that it would be appropriate if some day trees from Mount Vernon could spread their shade over the remains of that friend of Washington and the American cause. With the assent of the family and of the mayor of Thoré, and thanks to the good will of the ladies of the Mount Vernon Association, this idea was realized, and half a dozen seedlings from trees planted by Washington were sent to be placed around Rochambeau's monument—two elms, two maples, two redbuds, and six plants of ivy from Washington's tomb. The last news received about them showed that they had taken root and were growing.

In less than a century and a half New York has passed from the ten thousand inhabitants it possessed under Clinton to the five million and more of today. Philadelphia, once the chief city, "an immense town," Closen had called it, has now ten times more houses than it had citizens.

Partly owing again to France ceding, unasked, the whole territory of Louisiana in 1803, the frontier of this country, which the upper Hudson formerly divided in its center, has been pushed back to the Pacific; the three million Americans of Washington and Rochambeau have become the one hundred million of today. From the time when the flags of the two countries floated on the ruins of Yorktown the equilibrium of the world has been altered.

There is, perhaps, no case in which, with the unavoidable mixture of human interests, a war has been more undoubtedly waged for an idea. The fact was made obvious at the peace, when victorious France, being offered Canada for a separate settlement, refused, and kept her word not to accept any material advantage, the whole nation being in accord and the people illuminating for joy.



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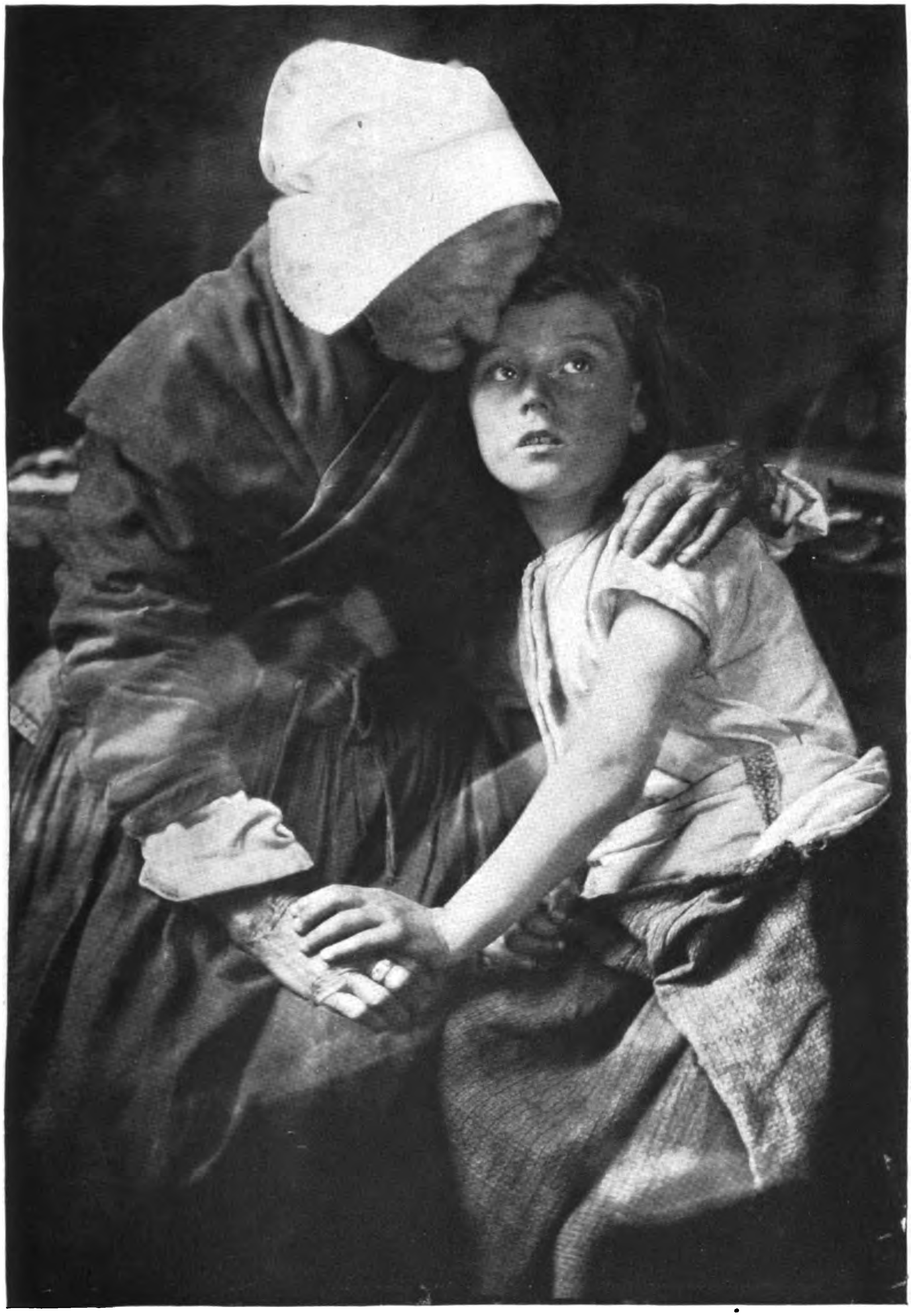
A MADONNA OF SORROW AT HER SON'S GRAVE

If the sympathy of the civilized world cannot still the anguish of the moment, the ages to come will venerate such heroic women who taught their sons the highest bravery, the finest courtesy, the loftiest honor—and who gave their all for France.

Photograph by Der Vereinigten Kunstanst. A.-G.

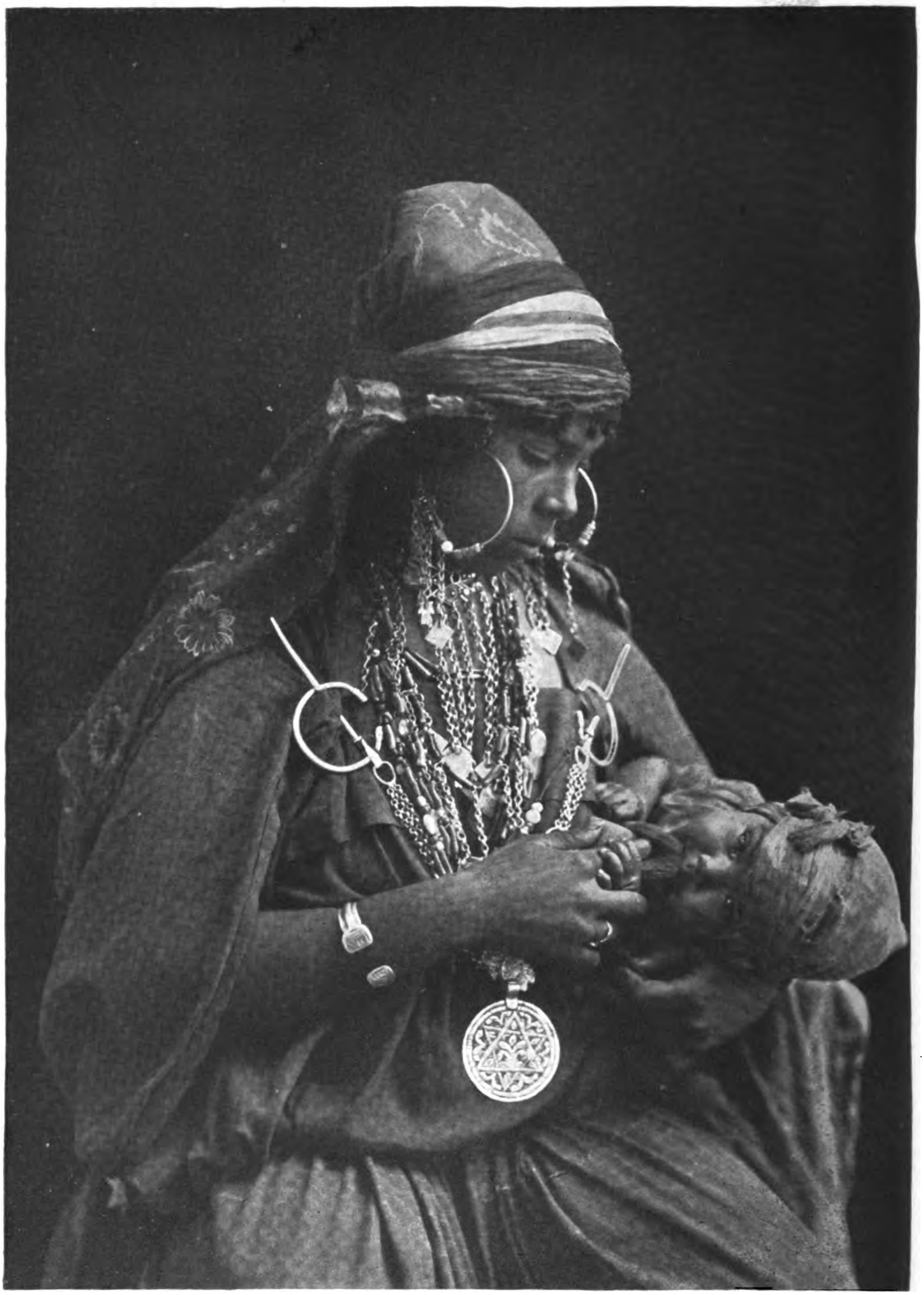
A MADONNA OF THE MOUNTAINS

In the whirlpool of Europe, Switzerland's political neutrality has kept its balance, and peace of a sort exists within the little democracy's borders. But it is a peace strained by the evidences of war and shot through with thoughts of another little state which had no friendly Alps to guard it—only a treaty and the honor of nations. Mother hearts cannot forget that there are no such idyls as this in Belgium today.



A MADONNA OF SACRIFICE

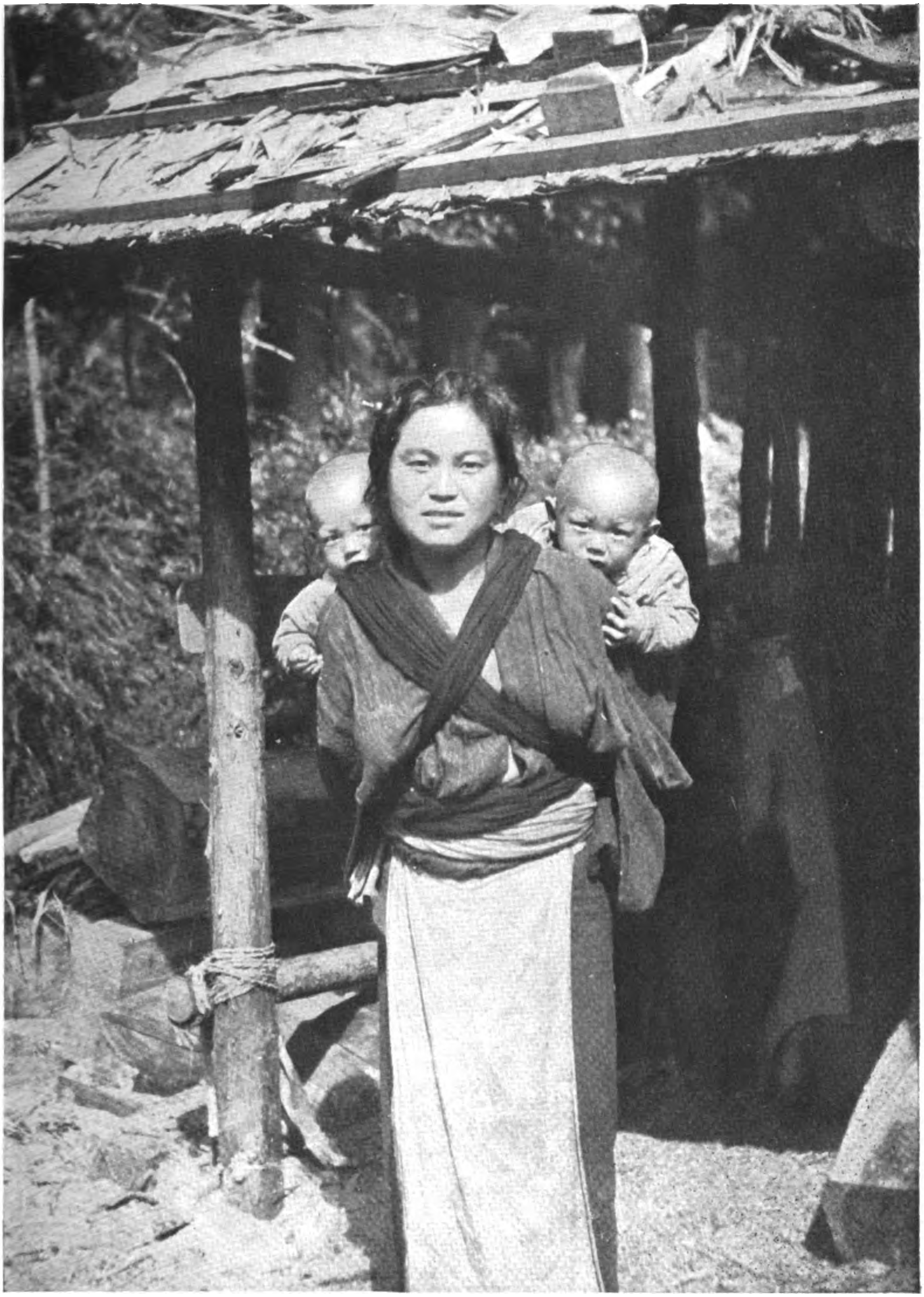
Wordless reverence is the most fitting tribute to the Mothers of Belgium. May her sole remaining treasure, in the liberated and peace-blessed world of the future, live to realize that in the terrible vision of the present his eyes have seen the glory of the coming of the Lord.



Photograph by Garrigues

A BEDOUIN MOTHER AND CHILD

The father of this little nomad may be a warlike bandit with a cloudy notion of property rights and other details of the civilized code; his mother a simple daughter of the desert with a childish curiosity and fondness for gaudy trinkets, but her babe has the divine heritage of mother love as truly as the most fortunate child of our own land.



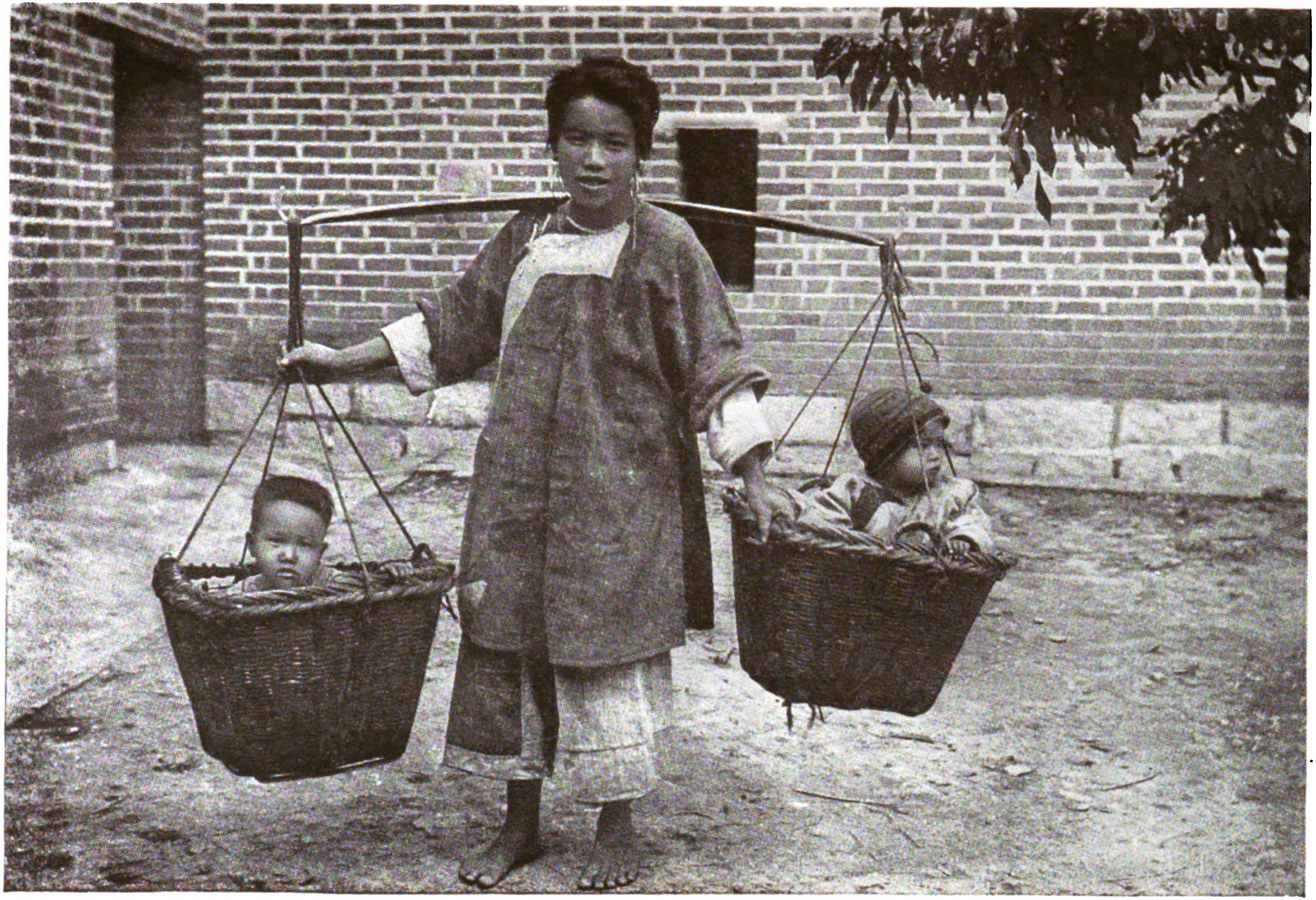
Negative by Eliza R. Scidmore

A MOTHER OF WARRIORS: JAPAN

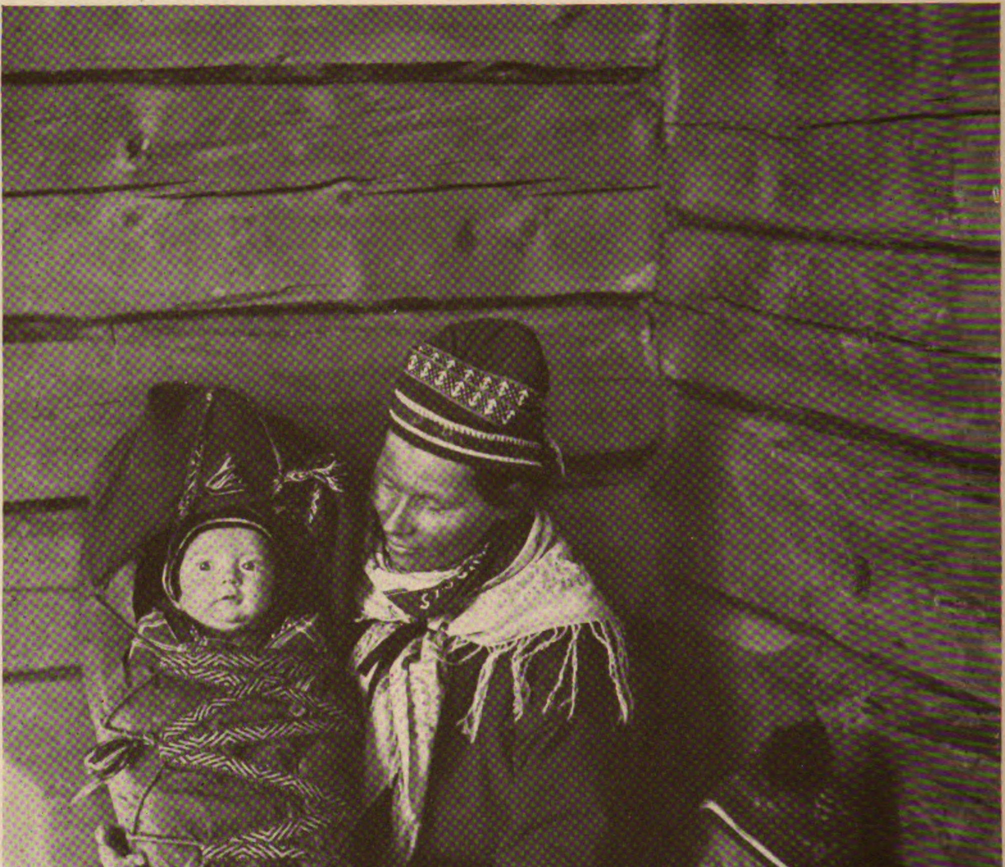
Stoicism is more than a tenet with the Japanese; it is almost a religion, and the mother of these babes, if the hand of death were laid upon them, could with calm fortitude relate her loss to a stranger without the display of grief, for it is a cardinal principle of her politeness that she should never burden another with her woes. But beneath this cross-barred cradle of cloth there beats the universal mother heart—universal in its high hopes for her children's future and in its eager joy at personal sacrifice for their happiness.

A MADONNA OF THE GREAT PLAINS

The Indian race, in general, has offered resistance to the American "melting pot," but Indian metal, after proper contact with civilized customs and industries, has gone into the making of many examples of splendid citizenship.



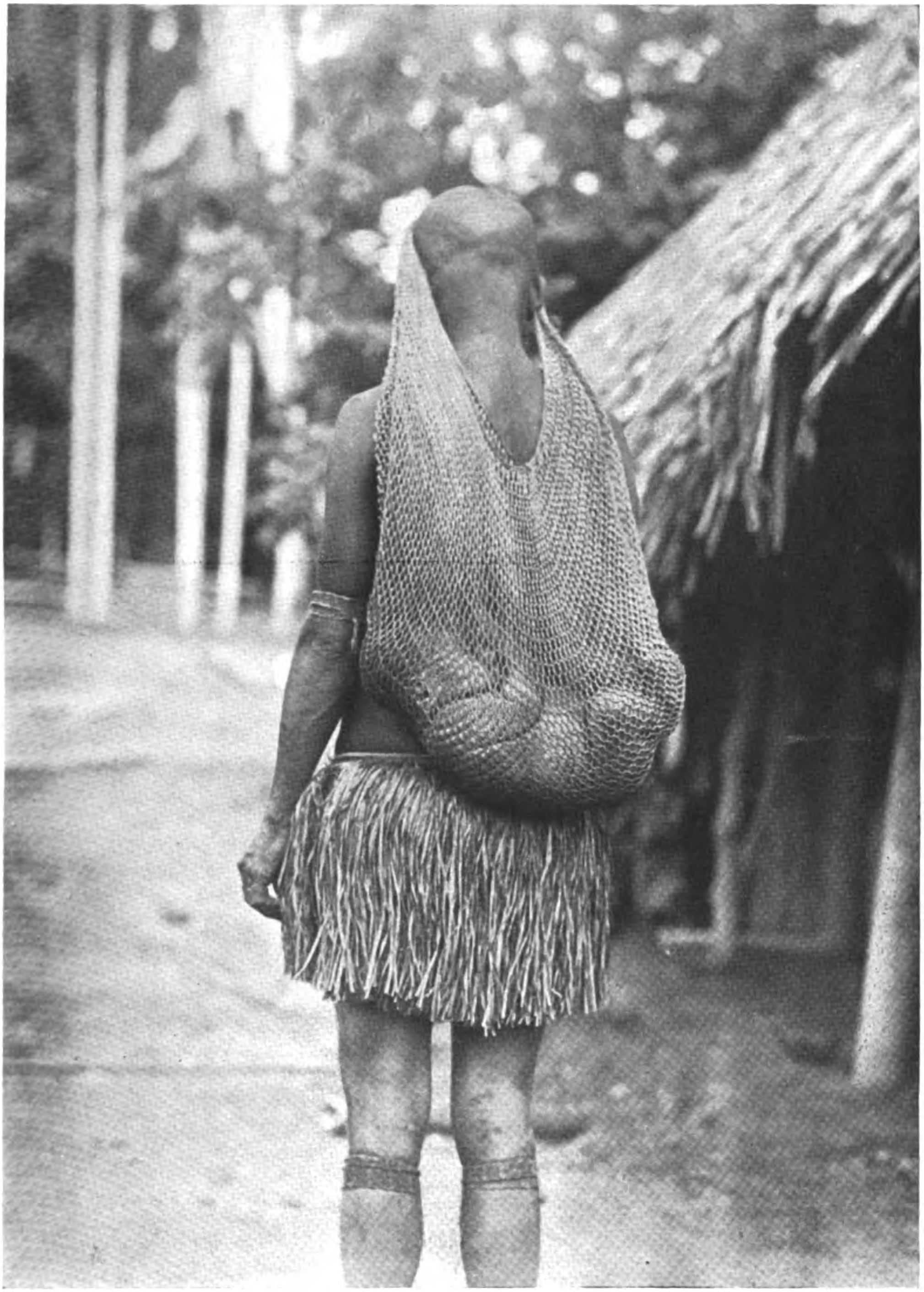
THE BALANCE OF POWER IN CHINA



Photograph by Borg Mesch

WARM HEARTS OF THE NORTH

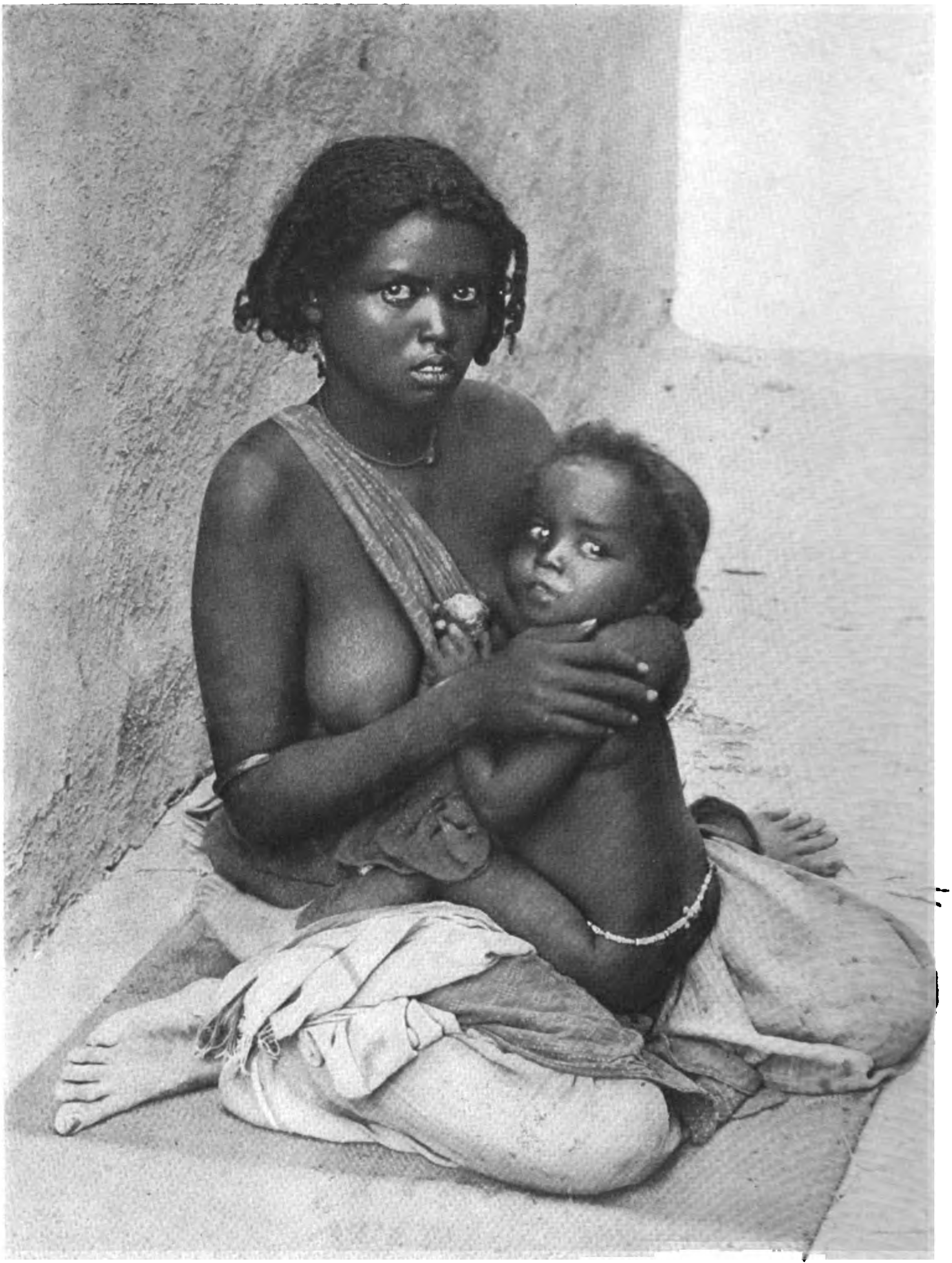
The Lapland father may measure his wealth in herds of reindeer, in hides and pelts, but the Lapland mother knows that her bright-eyed, smiling baby and her sturdy two-year-old are the treasures beyond price.



Photograph by A. B. Lewis

A NEW GUINEA WOMAN AND BABY

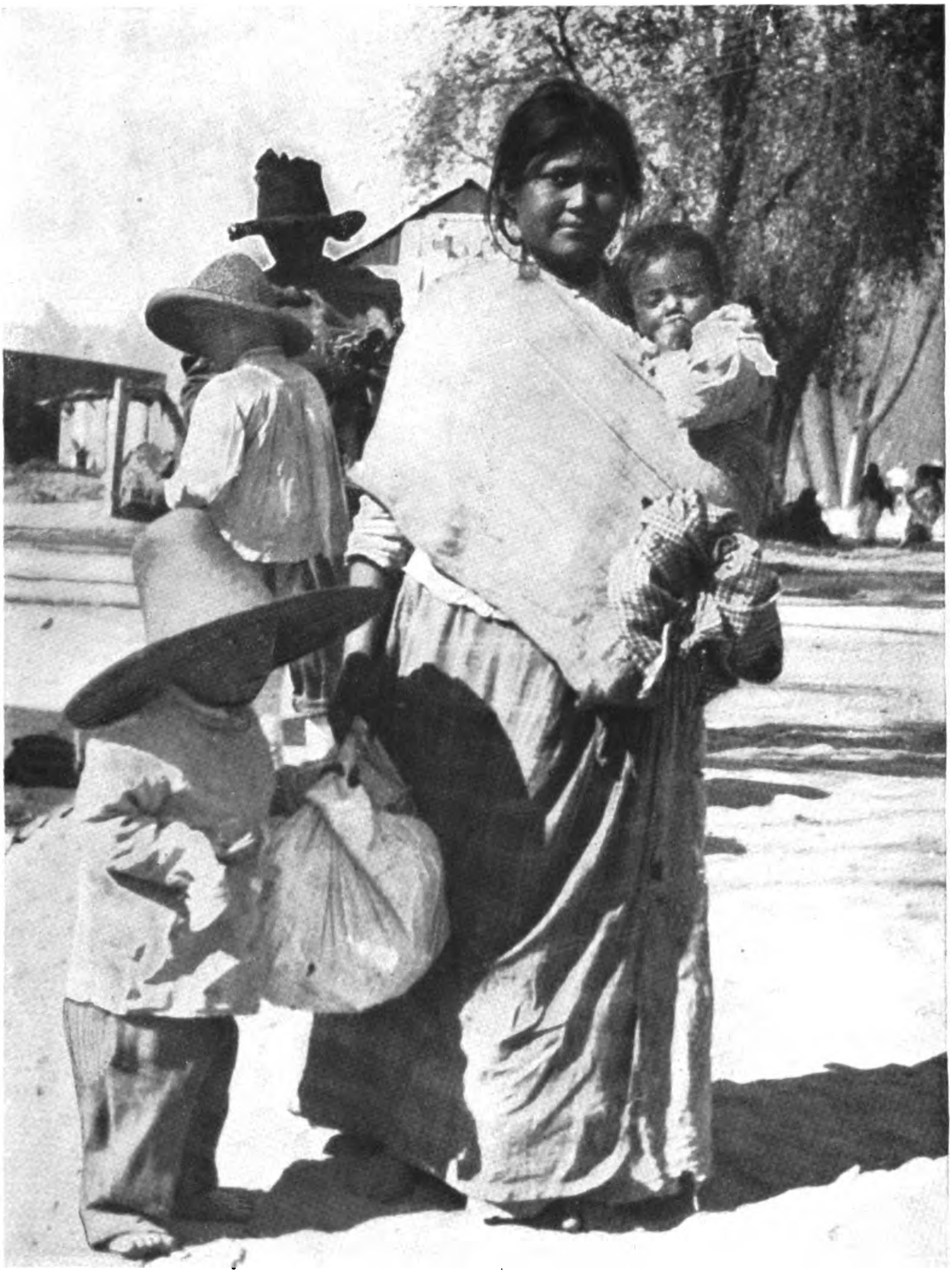
This device is at a disadvantage when compared with an American cradle, but it is a touching evidence of maternal inventiveness and industry at work for baby's safety even in the South Seas.



Photograph by Mrs. Charles K. Moser

YOUNG SOMALI MOTHER AND BABE: ADEN

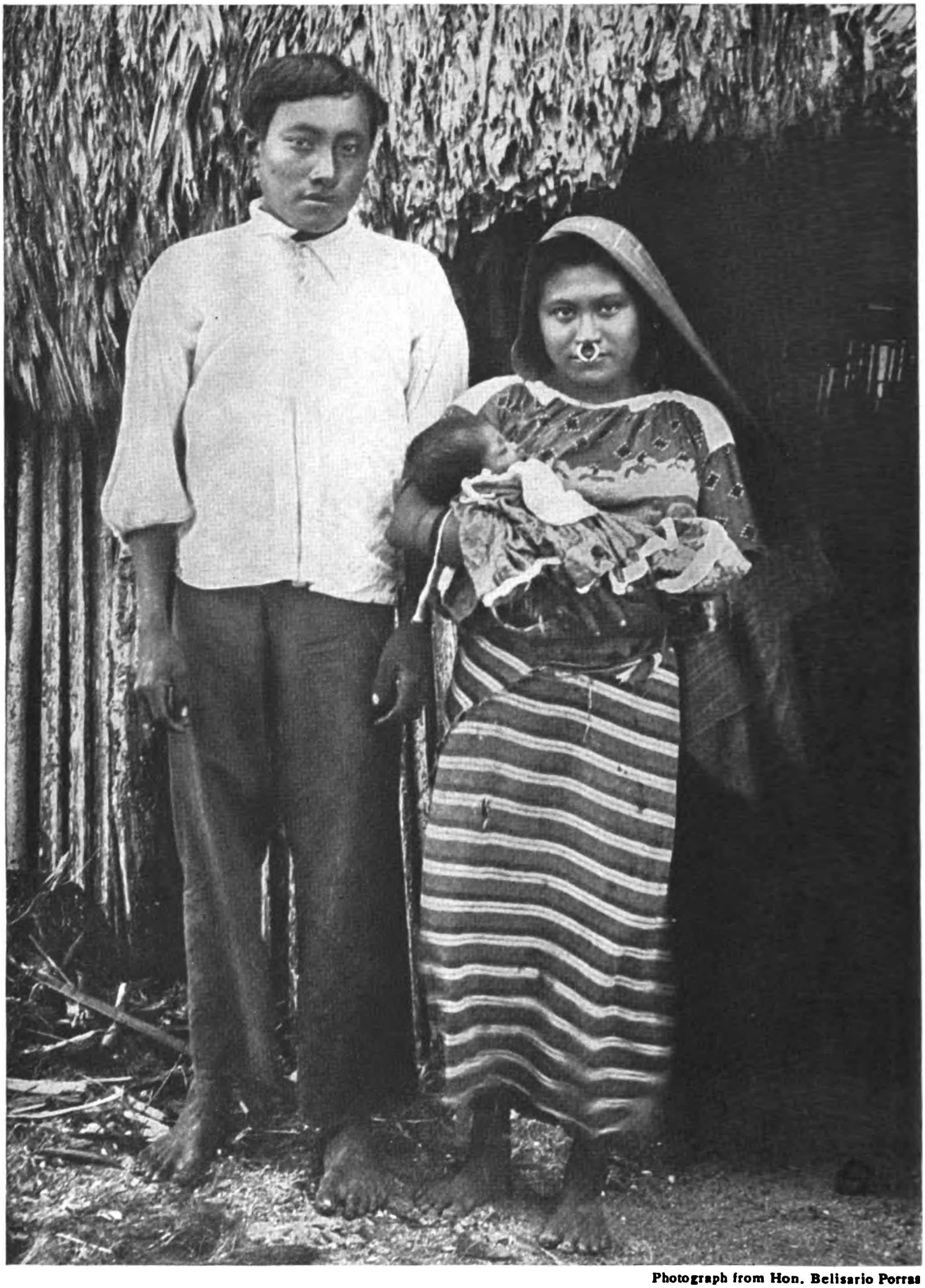
Even the primitive heart of a Somali woman is instinct with a sense of protection for the innocence and helplessness of a child.



Photograph by S. J. Spooner

A PATIENT MEXICAN MOTHER

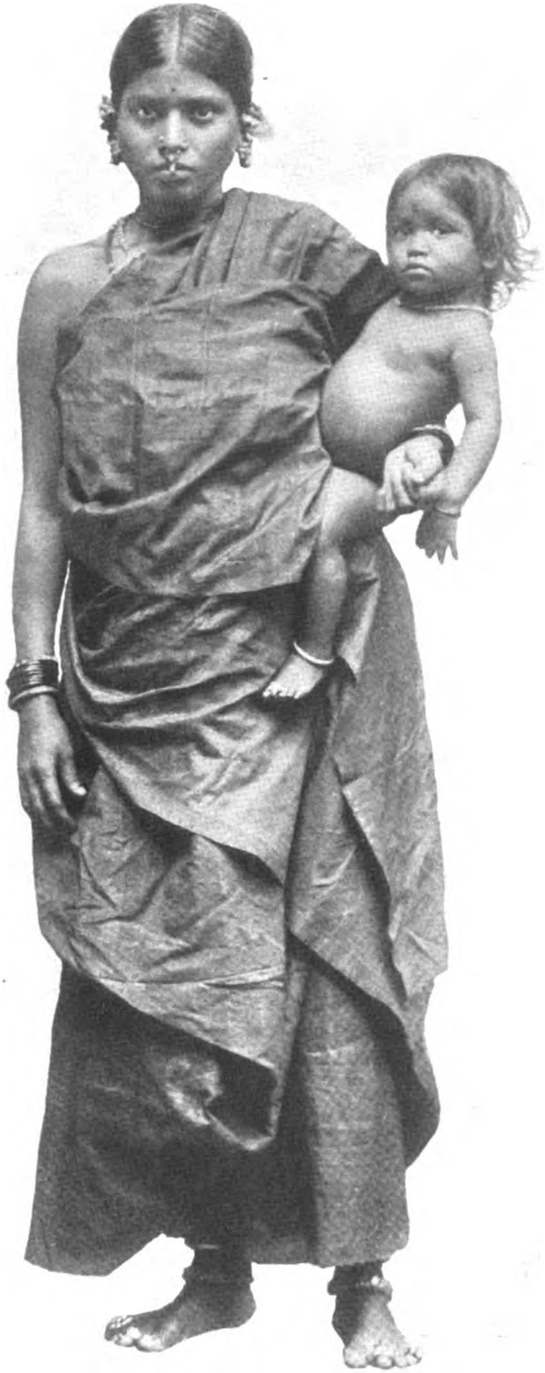
When war for the peace of the world and "for the principles that gave her birth," is welding the great heart of America into high-purposed unity, she must needs feel a deep pity for the mothers and children of distracted Mexico, and a just indignation that their burden of poverty and distress has been increased by selfish Prussian intrigue.



Photograph from Hon. Belisario Porras

INDIAN MOTHER AND BABE: PANAMA

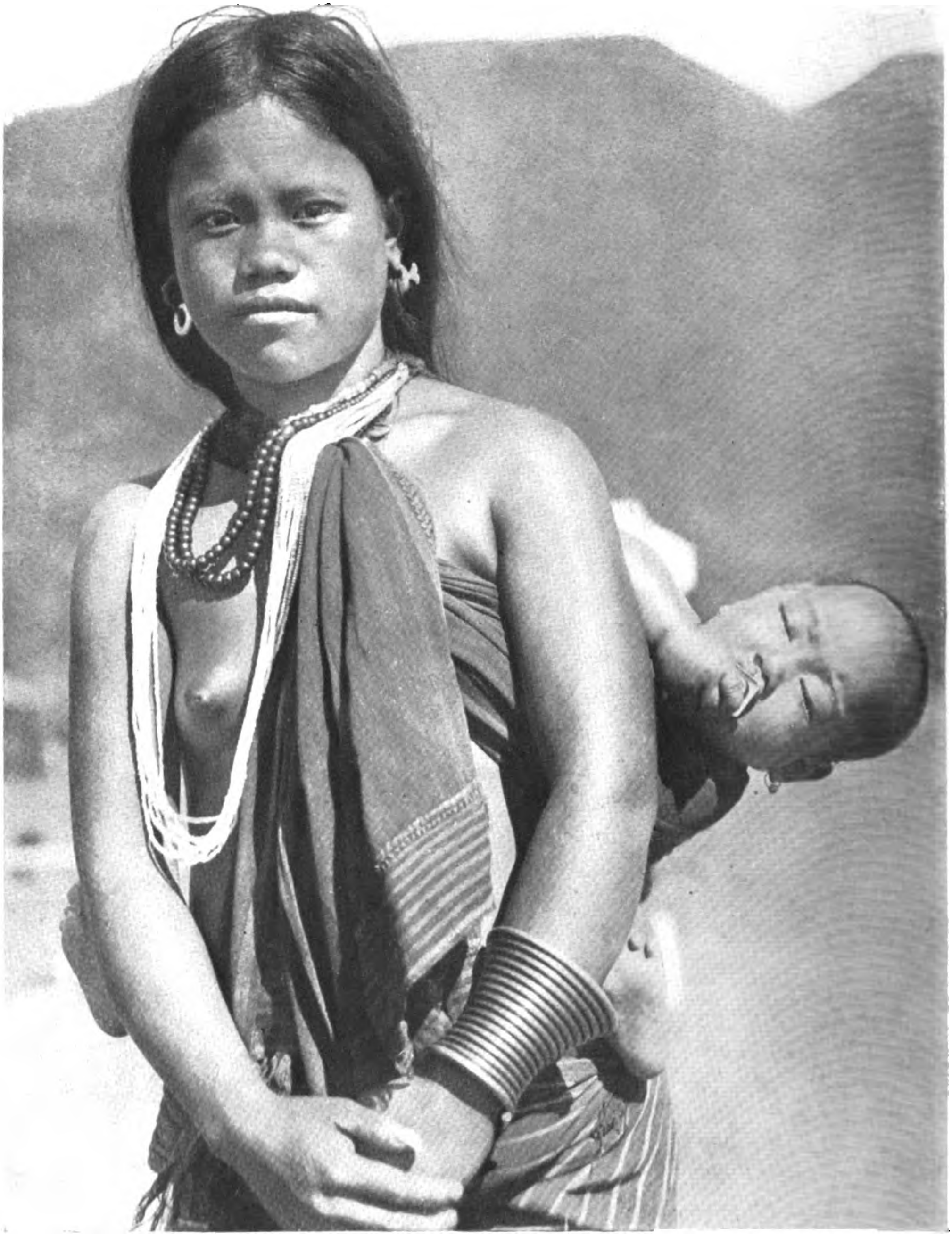
The Cuna-Cuna, or Tule Indians of the San Blas coast of Panama, are of the purest aboriginal strain. For hundreds of years they have resisted amalgamation, and woe to the Cuna-Cuna belle who looks with favor upon a "foreign" lover. They are an intelligent race and are not savages by any means—even though nose rings are a part of the adornment of all members of the gentler sex, who wear them from the time they begin to walk.



Photograph from Alexander Graham Bell

MOTHER AND CHILD IN CEYLON

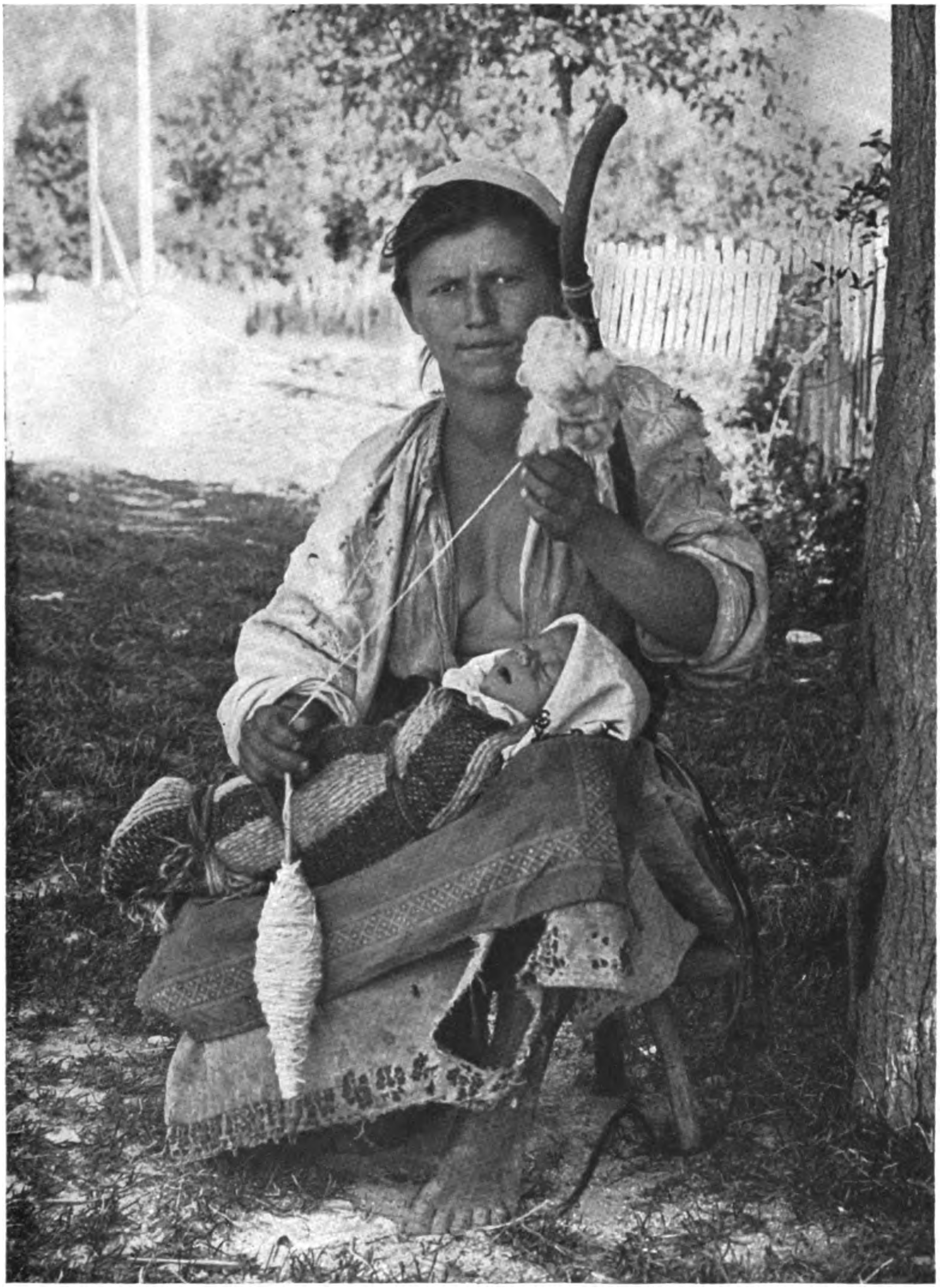
In spite of the white man's improvements, the climate of Ceylon is not merciful to baby dwellers in "the Half-way House of the East;" but the little brown natives are merry and bright-eyed, nevertheless. Life is sweet; although, of course, much sweeter when one has a bit of palm sugar to suck.



Photograph by Harriet Chalmers Adams

MOTHERHOOD IN THE PHILIPPINES

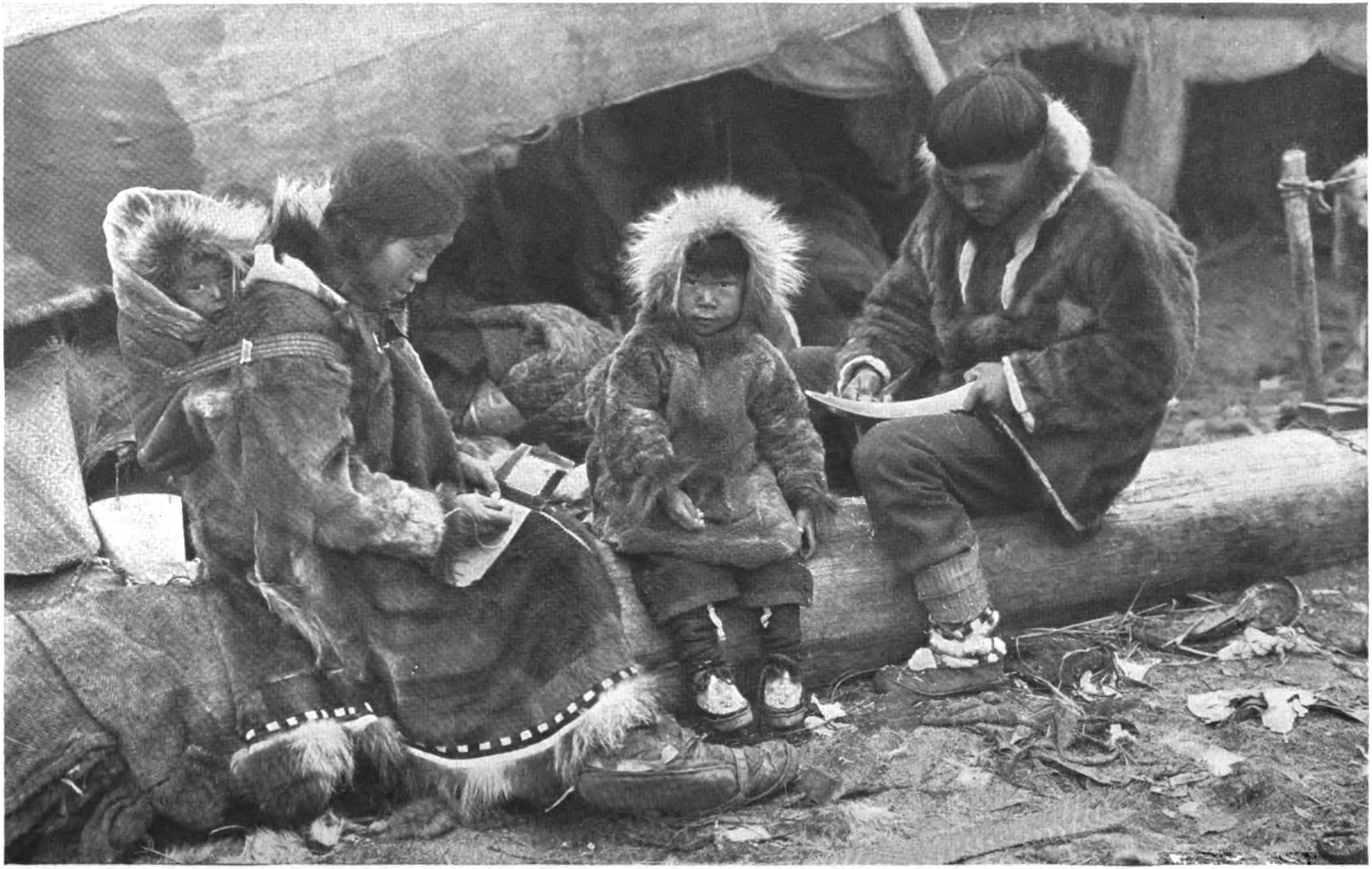
He doesn't know that, after his mother, Uncle Sam is his best friend. Had he belonged to an earlier generation his childhood would have been spent at work in the fields until he was old enough to join father in head-hunting. Under American direction, the future probably holds for him an education and a respectable career as a farmer or as a member of the native police. At present he is just a healthy little Ifugao; mother's back is a warm and comfortable reality—and "Who is Uncle Sam, anyway?"



Photograph by D. W. Iddings

A HUNGARIAN GYPSY MOTHER AND CHILD—AT HOME

Neither the poets who have celebrated the gypsy passion for freedom and the open road, nor the ethnologists who have studied the mysterious origin of the race have offered an explanation of the Romany's lack of that almost universal quality—a love for home.



Photograph by George R. King

AN ESKIMO FAMILY

Tenderness and responsibility in their treatment of children is a virtue of the Eskimo which binds them closer to the brotherhood of civilized peoples than their skill at carving or with the needle.

OUR SECOND ALLIANCE

BY J. J. JUSSERAND

AMBASSADOR FROM FRANCE TO THE UNITED STATES

The following impromptu address by Ambassador Jusserand was delivered at the reception by the United States Congress to M. Viviani, President of the French Commission, and Marshal Joffre, in the House of Representatives on May 3. The occasion was unique in that it was the first and only time that a resident ambassador of any foreign country has addressed the United States Congress.

MR. SPEAKER AND GENTLEMEN OF THE HOUSE OF REPRESENTATIVES: I might repeat only the words of Marshal Joffre, though I have not the same excuse for not making a longer speech; but the words interpret my feelings as well as his and those of all my compatriots. Gentlemen, I thank you.

This occasion is a very great one, and I am sure that those two men whose portraits adorn this Hall—Washington and Lafayette—those two friends who fought for liberty, would, if they could, also applaud, and say to their descendants, their American and their French ones, "Dear people, we thank you."

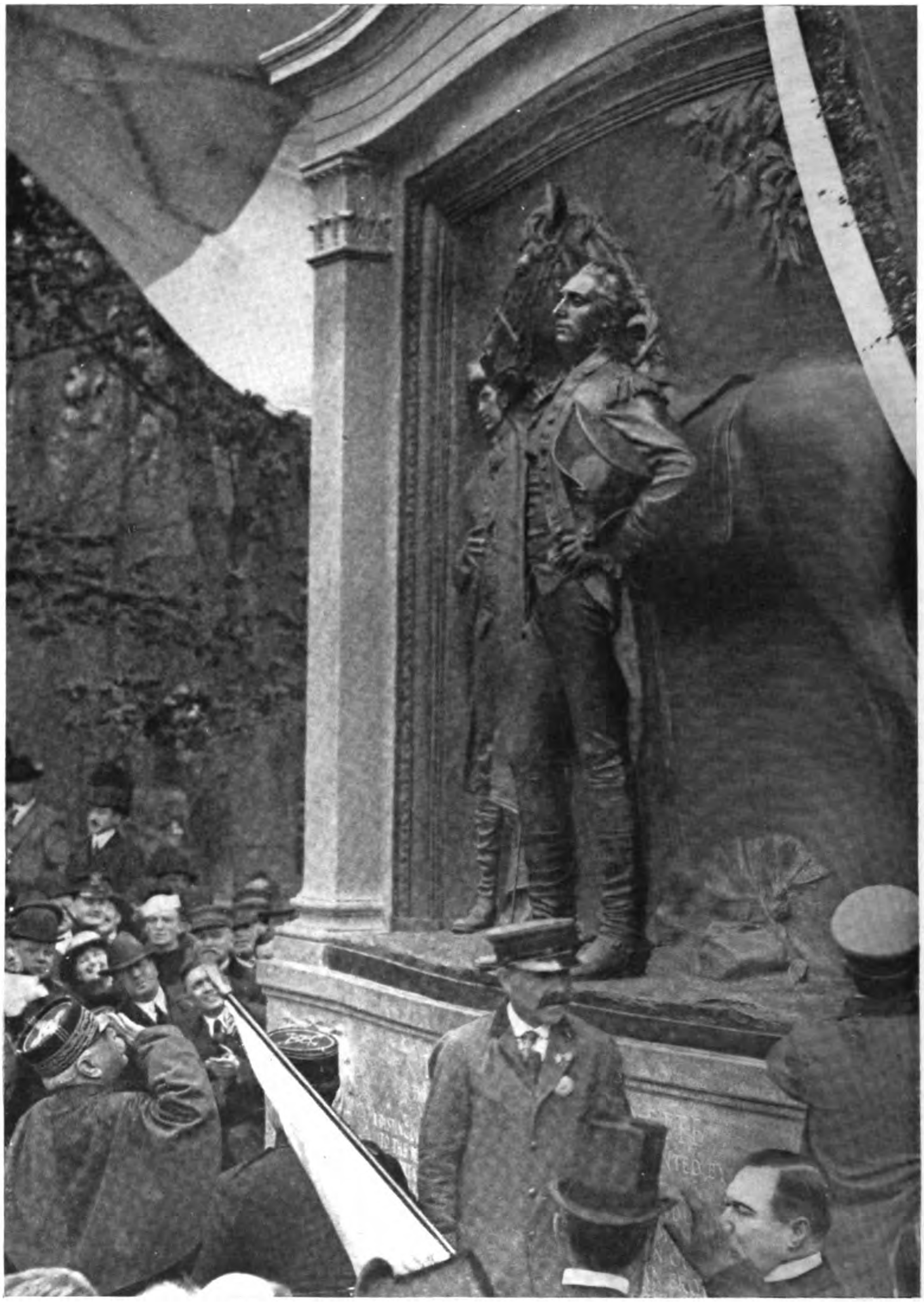
What you have been doing, the laws you have passed, the decisions you have taken, touch us deeply, and touch the French people in a very particular fashion, because what you have done is a sort of counterpart of what we did long ago.

What we did was to come to the rescue of men who wanted to be free, and our desire was to help them and to have no other recompense than to succeed, and that liberty should be established in this new continent.

What we did was unique then in the history of the world. We expected nothing for ourselves but your friendship, and that we got. We did not know that ever a time would come when the same action would be taken by another of the nations of the world; and yet that time has come, the same action has been taken, with the same energy, the same generosity, the same disinterestedness that characterized the conduct of those other men many years ago. It has been taken by the United States.

What you do now is to come to Europe to take part in the fight for liberty, a fight in which you expect no recompense, no advantage, except that very great advantage, that in the same way that we helped to secure liberty—human liberty, individual liberty, national liberty—on this continent, you will fight to see that liberty be preserved in the broad family of nations.

Thanks to you, we shall see the calamities of this struggle shortened, and a new spirit of liberty grow greater and stronger, pervade all countries and indeed fill the world.



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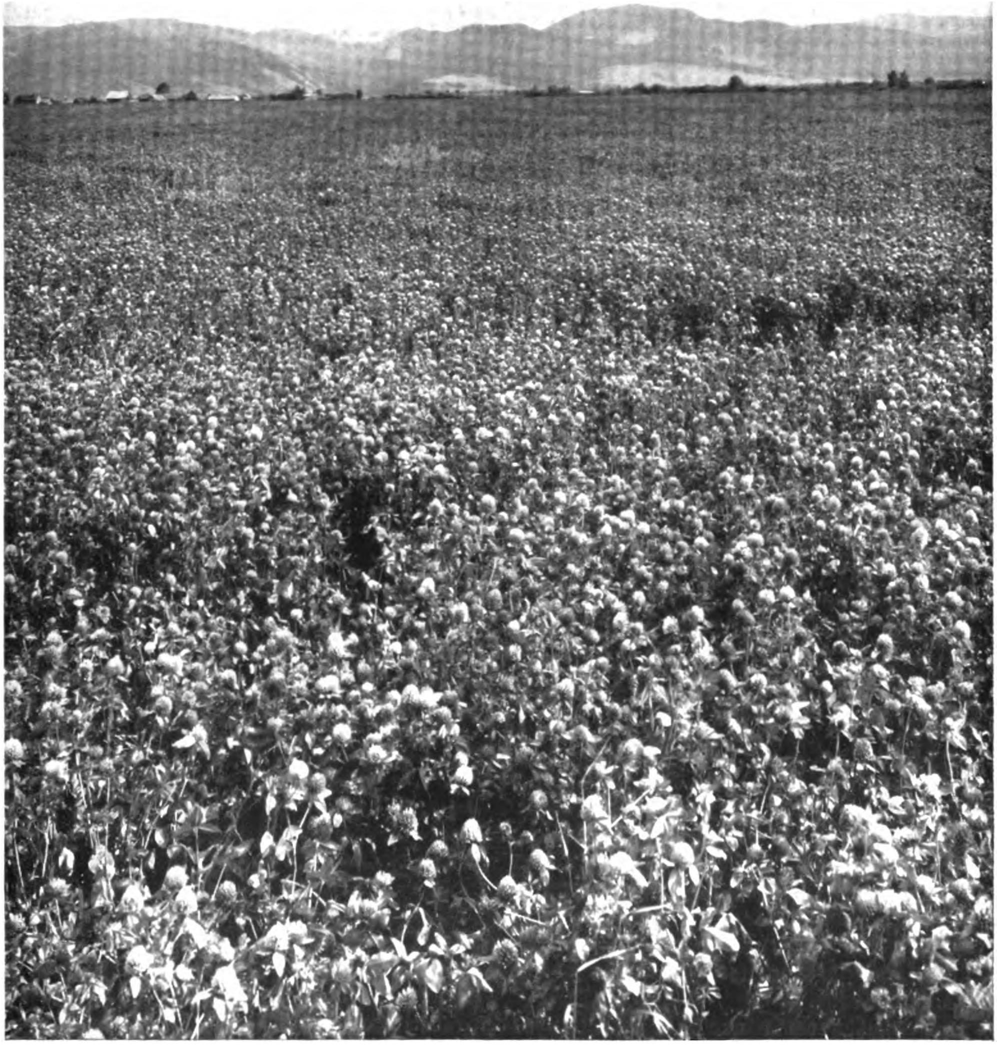
MARSHAL JOFFRE UNVEILS THE MEMORIAL TO LAFAYETTE IN PROSPECT PARK, BROOKLYN

Americans, as long as the United States endures, will reverence the name of Lafayette, who, though inheriting immense wealth and, as head of one of the oldest and most distinguished families, assured of an influential career in France, deliberately abandoned the advantages of birth to fight in our country for the liberation of mankind.



Photograph by Albert Schlechten

A CLOVER FIELD IN MONTANA (SEE PAGE 517)

Although thirty-eight of the States have in one way or another expressed their preferences and chosen their flower queens, this is the first attempt that has been made to assemble in a single publication color paintings and descriptions of all the State flowers (pp. 481-517).

Photograph by Charles Martin and Ethel M. Bagg

ROLLING AND PASTING RATION HEATERS AT HOME

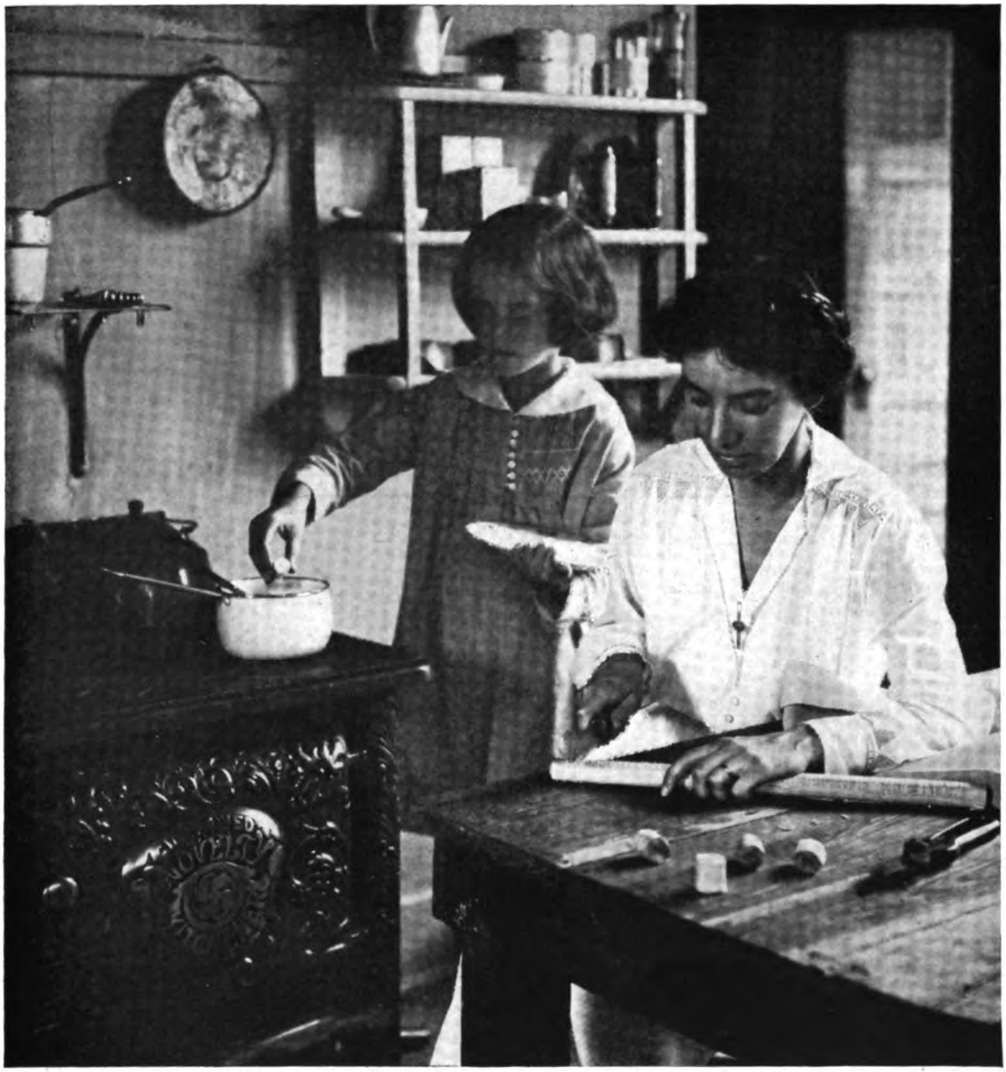
THE CONVERSION OF OLD NEWSPAPERS AND CANDLE ENDS INTO FUEL

IN ITALY and France women and children are rolling old newspapers into tight rolls, pasting down the edges with glue or paste, and boiling them in paraffin to make ration heaters (*scalda-rancio*) out of them for the use of the soldiers in the trenches in the high Alps, where coal cannot be sent. They are making them by the million. The Italian National Society furnishes 1½ million a day to the government, and the old newspapers are being used up for this purpose so fast that they are becoming scarce, and paraffin has become very expensive.

In America there are still millions of candle ends and thousands of tons of newspapers scattered over the country, and it would seem to be well worth while for the thousands of willing hands in the homes to convert them into these most useful ration heaters for the boys at the front, or for their use next winter in the training camps, or even for use at home, where they can take the place of the more expensive solid alcohol or replace kindlings in the kitchen stove.

It is the easiest thing imaginable to make ration heaters, or *scalda-rancio,* as they are called in Italy, if one follows the directions of the National Italian Society.

Spread out four newspapers, eight sheets in all, and begin rolling at the long edge. Roll as tightly as possible until the papers are half rolled, then fold back the first three sheets toward the rolled part and continue to wrap around the roll almost to the first fold, then fold back another three sheets and continue to wrap around the roll again up to the last margin of the paper. On this margin, con-



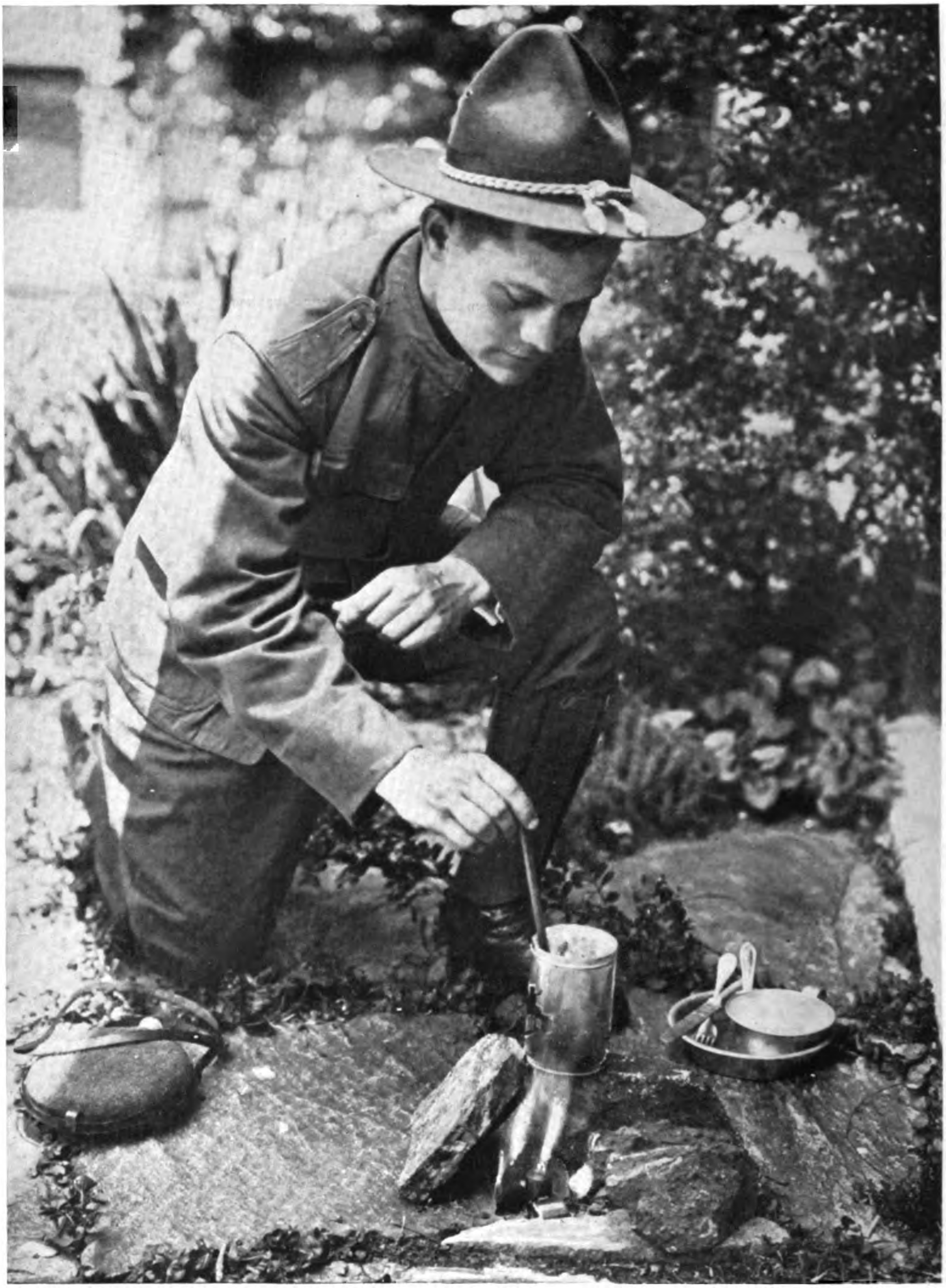
Photograph by Charles Martin and Ethel M. Bagg

CUTTING THE NEWSPAPER ROLLS AND MELTING THE CANDLE ENDS

sisting of two sheets, spread a little glue or paste and continue the rolling, so as to make a compact roll of paper almost like a torch. If six of the sheets are not turned under, there will be too many edges to glue.

While the newspapers may be cut along the line of the columns before rolling and the individual columns rolled separately, as is done in the making of the trench candles in France, it is easier to roll the whole newspaper into a long roll and then cut it into short lengths. A sharp carving knife, a pair of pruning shears, or an old-fashioned hay-cutter will cut the rolls easily. These little rolls must then be boiled for four minutes in enough paraffin to cover them and then taken out and cooled, when they are ready to be put in bags and sent to the front. If there are more newspapers than candle ends, block paraffin can be bought for a few cents at any grocery or drug store.

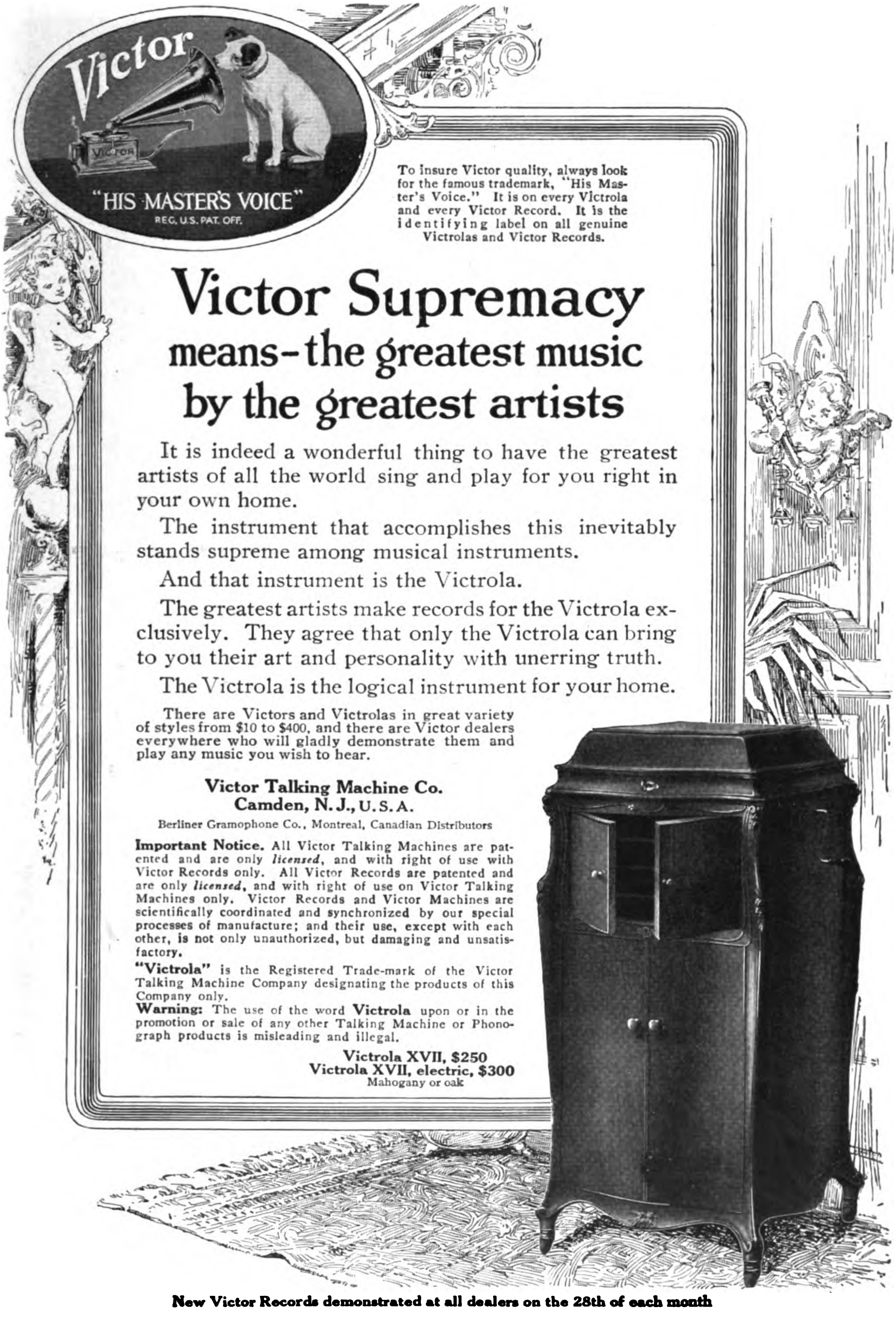
Little children and grown-ups in Italy and France are rolling, gluing, and paraffining these ration heaters by the million, and their fathers and husbands in the high Alps and other places where wood and coal cannot be sent are cooking their rations over them.



Photograph by Charles Martin and Ethel M. Bagg

A SOLDIER BOILING HIS RATION OVER THE HOME-MADE RATION HEATERS

Three of these little rolls of paper, no larger than a spool of silk, saturated with hot paraffin and allowed to cool, will burn without smoke, which in the presence of the enemy is dangerous, and will boil a pint of soup in about ten minutes and keep lighted for twenty minutes or half an hour. By supporting the can of soup on pieces of rock and protecting the flames from the wind an ideal individual camp meal can be made.



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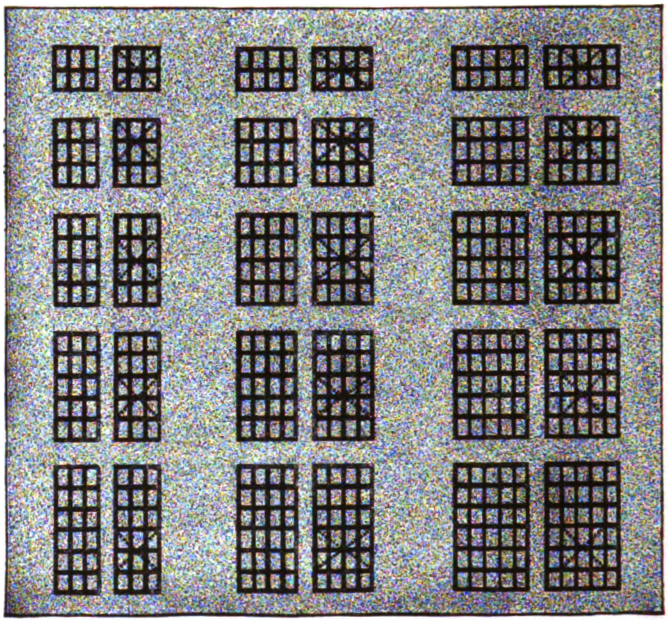
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6 PANES HIGH
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4 PANES WIDE
Y Width 4' 2[illegible]"
Z Width 4' 10[illegible]"
5 PANES WIDE
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VOLUME XXXI NUMBER SIX

THE NATIONAL GEOGRAPHIC MAGAZINE

JUNE, 1917

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AMBASSADOR JUSSERAND

Our State Flowers

Madonnas of Many Lands

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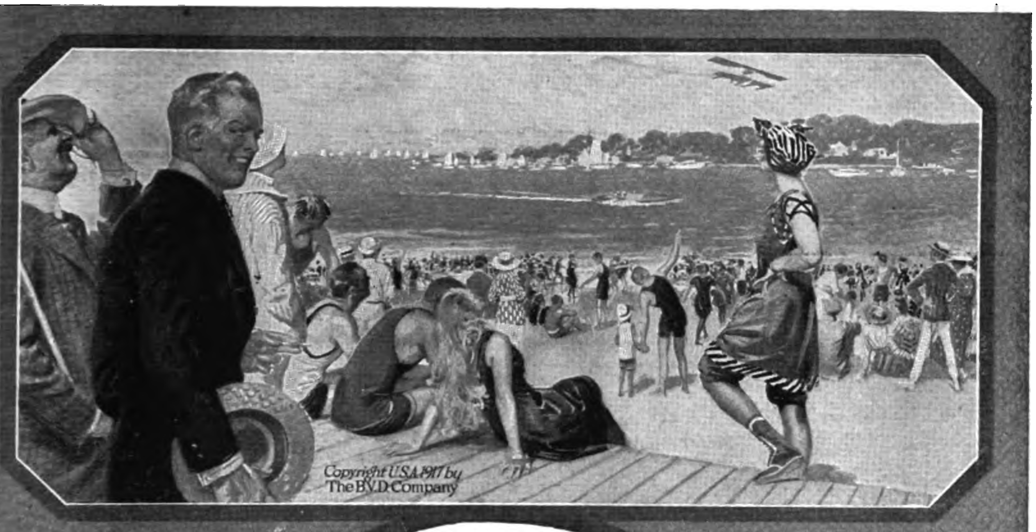

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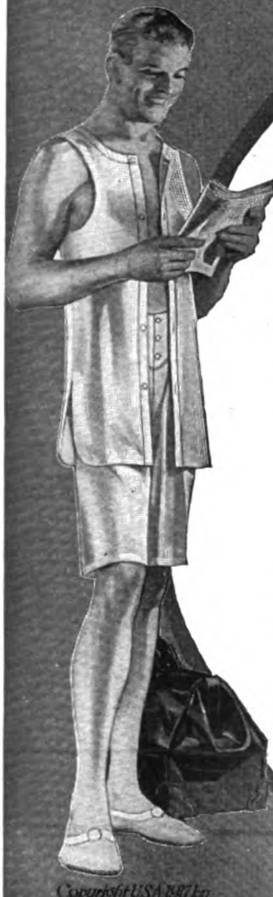

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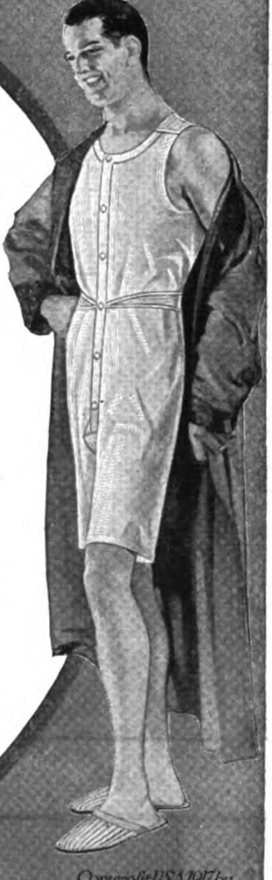

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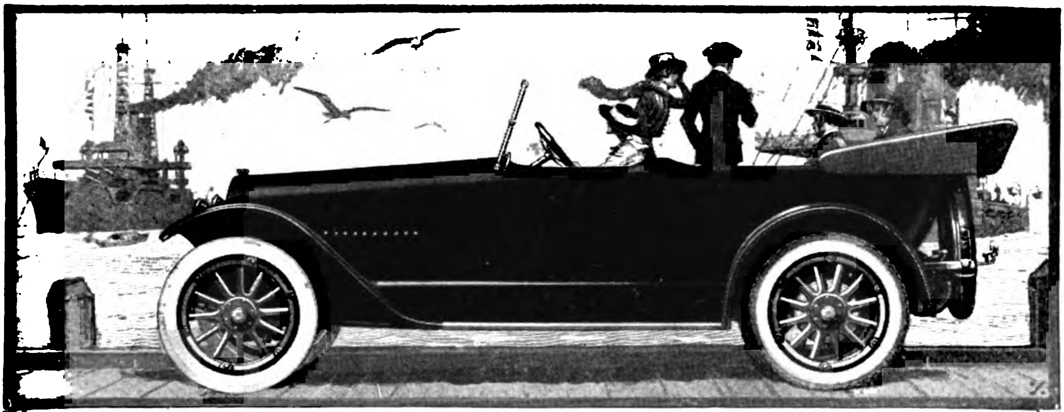


An Exceptional Car

Distinctive in a Hundred Ways

In the Mitchell car of either size you will find many unique attractions.

There are 31 wanted features which nearly all cars omit. There are luxuries and beauties far excelling any other car in this class.

Every vital part is built to the standard of 100 per cent over-strength. That is twice the usual margin of safety.

There are shock-absorbing springs found on no other car. They make this the easiest-riding car in existence. There is a remarkable motor, economical and efficient, the result of 14 years of study. There are reversible headlights, a ball-bearing steering gear, a dashboard engine primer, a light in the tonneau, a locked compartment for valuables.

There are eight new-style bodies, all exclusive to the Mitchell. The experts who designed them first reviewed 257 new models to include all the known attractions.

There is an extra-smart Club Roadster, a new-type Convertible Sedan.

All are built in this model plant, under John W. Bate's efficiency methods. The factory savings, amounting to millions of dollars, go into the extra values.

See these new models. See a truly complete car. See how strong a lifetime car should be. See how beautiful it can be. Over 70,000 motorists have come to the Bate-built Mitchells.

Mitchell SIXES

TWO SIZES

Mitchell—a roomy, 7-passenger Six, with 127-inch wheelbase and a highly-developed 48-horsepower motor.

$1460

Four-Passenger Roadster, $1495.
Sedan, $2175. Cabriolet, $1895.
Coupe, $1995.
Also Town Car and Limousine

Mitchell Junior—a 5-passenger Six on similar lines, with 120-inch wheelbase and a 40-horsepower motor—¼-inch smaller bore.

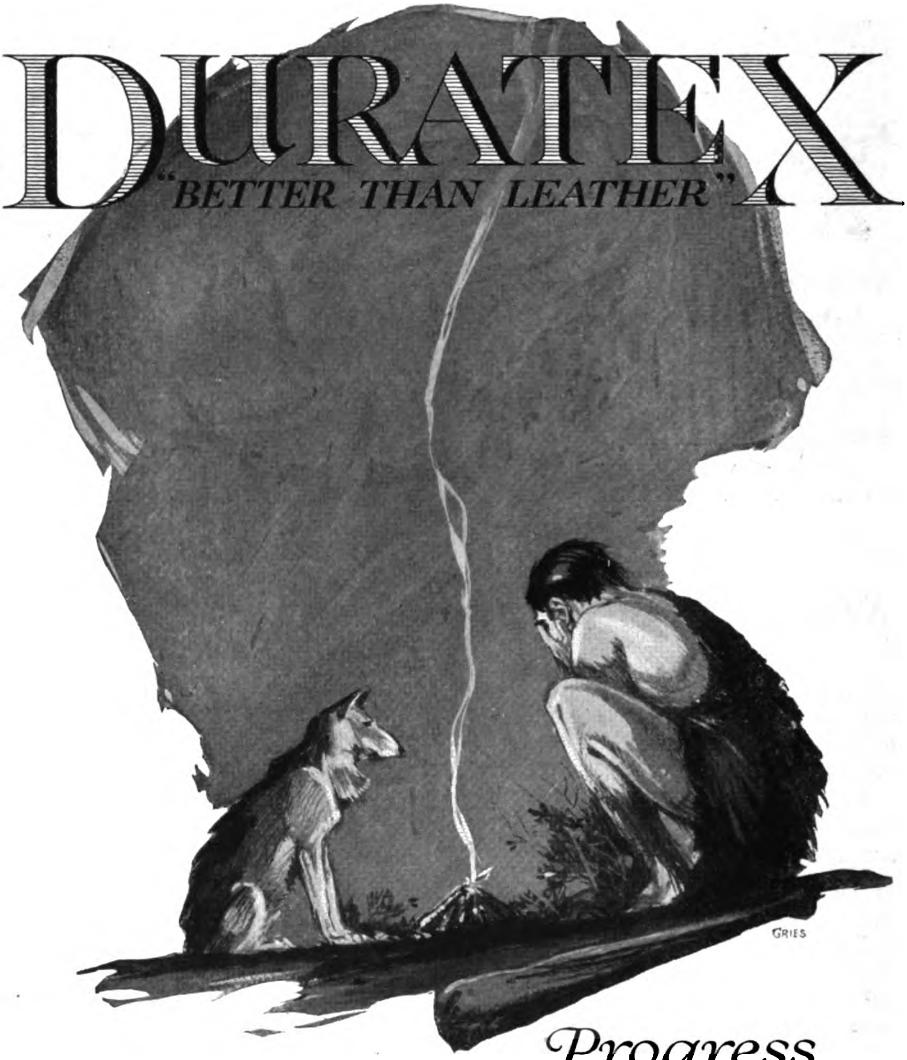
$1195

All Prices f. o. b. Racine

MITCHELL MOTORS COMPANY, Inc.
Racine, Wis., U. S. A.

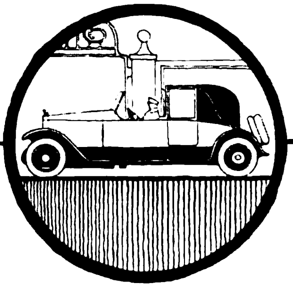
DURATEX

"BETTER THAN LEATHER"



Progress

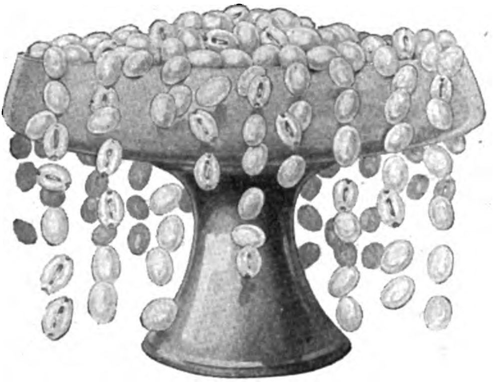
Making fire was man's first adventure in chemistry. This was the beginning of human progress Here for the first time he produced something which nature had failed to supply The greater beauty of Duratex and it's practical superiority to leather for motor car upholstery would seem to indicate that chemical science not only has met the situation created by the shortage of leather but has provided something better in place of it.



THE DURATEX COMPANY
Newark, N.J.

The Puffed Wheat Dish

As Every Child Would Like It—Constantly Overflowing



To the youthful lovers of Puffed Wheat and Rice, no dish seems large enough.

You know how it is—you mothers who have served them. Again and again the bowls come back for refilling.

There is never so much that the end of the dish doesn't leave a desire for more. For these bubbles of grain—airy, flaky, and nut-like—are delightful food confections.

Why Do You Stint Them?

Consider these facts, Mrs. Housewife.

These are whole grains, filled with all the elements that youthful bodies need. They are not partial foods, like most things. They are not unbalanced, so digestion is upset.

They are two of Nature's premier foods.

By Prof. Anderson's process—shooting from guns—every food cell is exploded. So every granule feeds.

No other grain food offers that advantage.

When such foods come in such likable form, why not let the children have them in abundance?

Puffed Grains are not mere breakfast cereals. They are flavory, crusty morsels to be mixed with any fruit. They are flimsy, toasted bubbles to float in bowls of milk.

They are nut-like tidbits for eating between meals. Douse them with melted butter. Use them in candy-making or as garnish for ice cream. They are ideal wafers for soups.

Such perfect foods, made so enticing, should be served in many ways.

Puffed Wheat **Puffed Rice**

and Corn Puffs

Each 15c Except in Far West

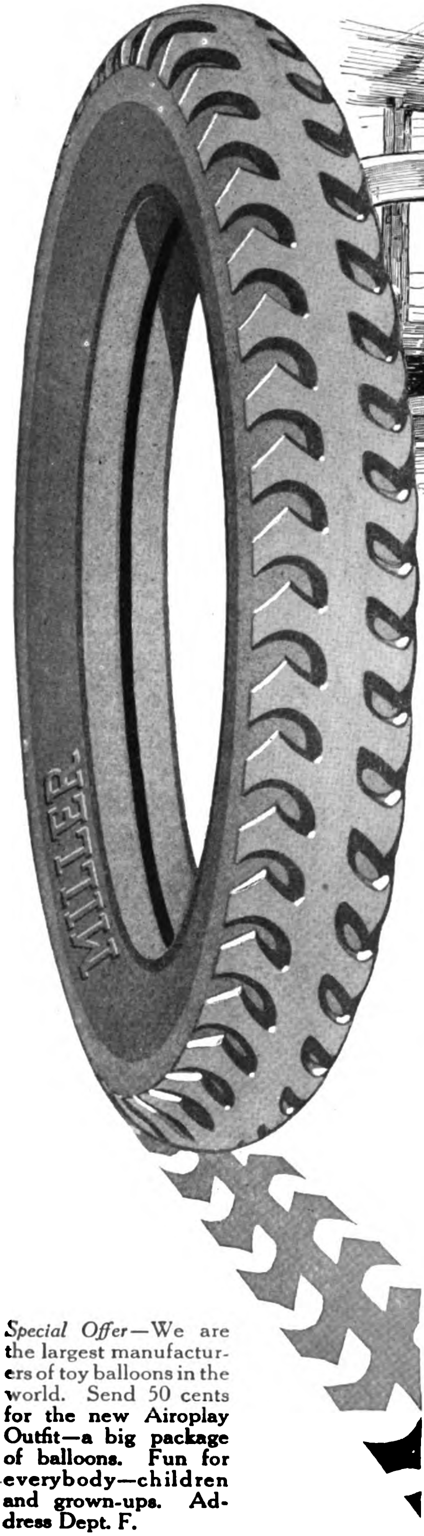
Puffed Grains in Milk

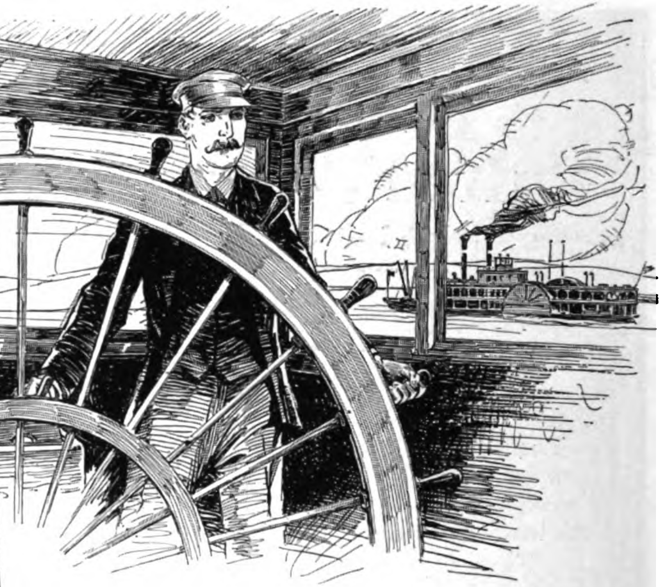
Puffed Grains Mixed with Fruit

The Quaker Oats Company

Sole Makers

(1529)





Mark Twain Was A Great Pilot!

Fifty years ago he knew every sand-bar and danger mark in that ever-changing Mississippi River. His *accurate* knowledge insured a safe, pleasant journey for his passengers.

But today you wouldn't ride with a pilot who steered according to Mark Twain's landmarks. The pilot of today must know the river channel as it is *now*.

The same is true of tires. You want tires built on the *accurate, scientific knowledge of today.*

Miller Tires

GEARED-TO-THE-ROAD

The Miller Method of vulcanizing is a modern development that retains the natural vegetable wax and oil in the fabric; builds rugged endurance and safety into the rubber tread. But even this modern process is charted daily by experienced Miller engineers and chemists—men recognized as dependable tire pilots. That's why Miller Tire users don't have mishaps, but get excessive mileage and care-free service.

You demand an up-to-date car. Demand a tire of today—a Miller Tire.

Special Offer—We are the largest manufacturers of toy balloons in the world. Send 50 cents **for the new Airoplay Outfit—a big package of balloons. Fun for everybody—children and grown-ups. Address Dept. F.**

For sale by Geared-to-the-Road Distributors and Dealers everywhere

THE MILLER RUBBER CO., AKRON, U. S. A.

JOHNS-MANVILLE ASBESTOS ROOFING

JOHNS-MANVILLE SERVICE COVERS THE CONTINENT

First National Bank Bldg., Omaha, Neb. Graham, Burnham & Co., Architects

THERE is no more magic in the resistance of Johns-Manville Asbestos Roofing to fire and the elements than there is in the warmth of wool, the permanence of granite, or in the resistance of rubber to water—it's natural. Every sheet of Johns-Manville Asbestos Roofing is naturally fire-repellent, water-resistant, time defiant, because each fibre of that felt is *naturally* endowed with those properties.

Your roof decision need not be one which asks the question "what kind of a roofing," but "what kind of a Johns-Manville Asbestos Roofing." There is not one negative factor in such a choice. It is the most economical roofing—the safest roofing—a roofing that rarely needs attention.

Is it any wonder that Johns-Manville Asbestos Roofing is fast gaining general acceptance, when an ideal material for roofing can now be had for any roof, as the list below will show?

Asbestos Built-Up Roofing for flat roofs, Asbestos Ready Roofing for sloping surfaces, Corrugated Asbestos Roofing for skeleton framing, Transite Asbestos Shingles for homes.

Johns-Manville Roofing Responsibility—a principle that certifies the service of every Johns-Manville Asbestos Roofing. You can register your roofing with us, and thus be assured of complete satisfaction in the service it gives.

H. W. JOHNS-MANVILLE CO.
NEW YORK CITY
10 Factories—Branches in 55 Large Cities

"In the Garden of Sleep"

BARRE GRANITE

Stands, the Everlasting Sentinel

For massive mausoleum or simple memorial stone, there is no other material so fittingly devised by Nature to combat the ravages of time and elements, in marking with everlasting beauty the last resting place.

Barre Granite, by its even texture, lends itself to whatever character of design or architecture is demanded, and its beauty is equally distinctive under the sculptor's chisel or in polished surface.

All Barre Granite is quarried at Barre, Vt. Specify that every part of your memorial be of Barre Granite.

Write for "Memorial Masterpieces," illustrating the monuments of many of America's distinguished citizens, including the Rockefeller, Fleischman, Heinz, Schley, Armour, Tarkington, Potter Palmer, Anheuser, Leland Stanford, and others.

Barre Quarriers and Manufacturers Ass'n
Dept. B, BARRE, VERMONT
"The Granite Center of the World"

Here's Fun For You!

A day in the woods with a Hawkeye Basket. Fish, hike, smoke, read, and rest in the woods and take along eatables and drinkables in a

Hawkeye BASKET REFRIGERATOR

Keeps contents cool, clean, and fresh for 36 hours with one filling of ice. Light weight, attractive, durable. The Hawkeye has been the keynote of hundreds of enjoyable days in the woods. Priced as low as $5.00.

Try a Hawkeye Basket—30 days without expense. Ask for Booklet 23.

BURLINGTON BASKET COMPANY
113 Hawkeye Bldg., Dept. M, Burlington, Iowa

You Can Make Photos in Natural Colors *with Your Own Camera*

USE the plate or film camera you now have. Process easily understood and readily followed by any one who can take black-and-white photographs. The new

HIBLOCK

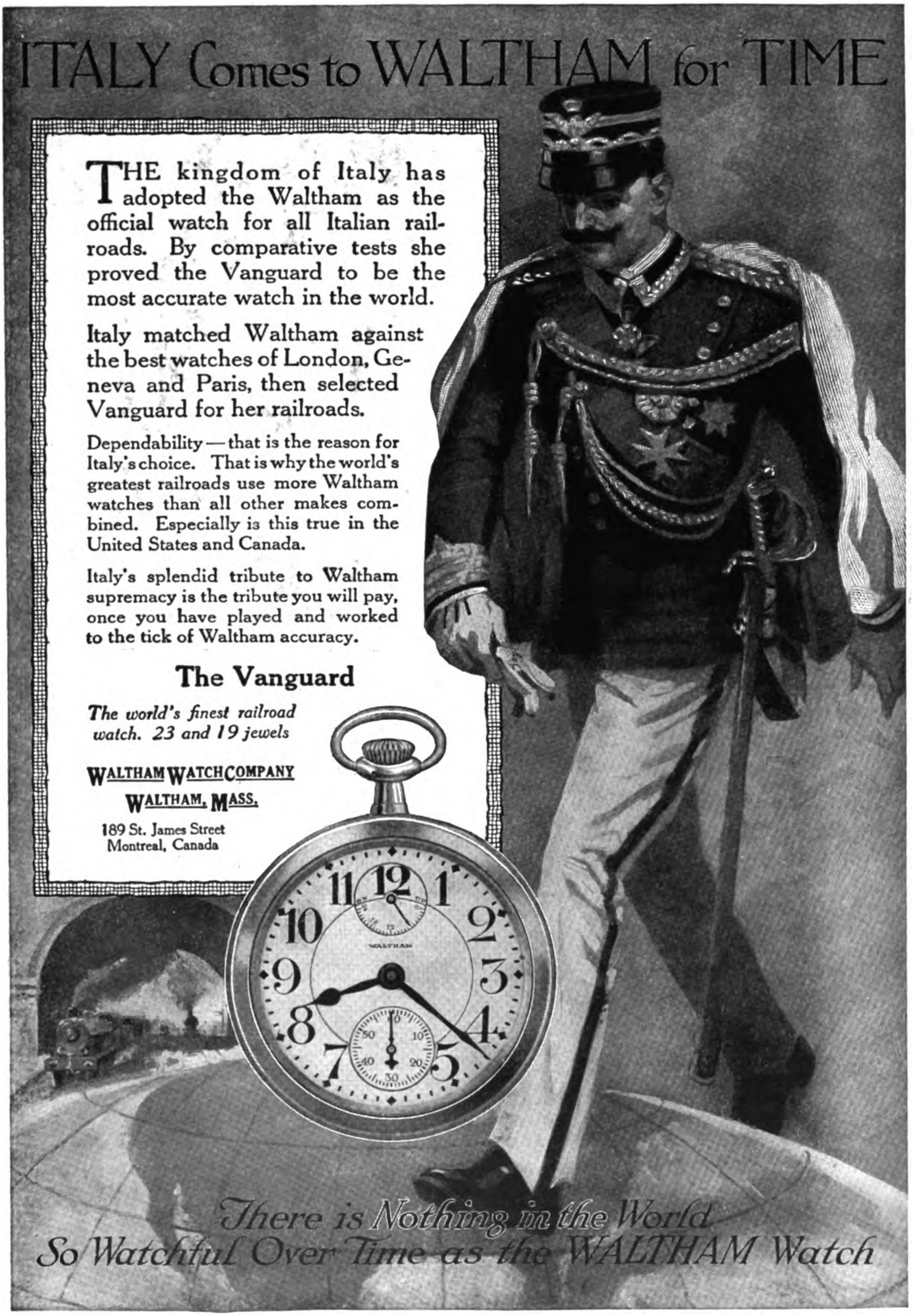
is a plate that gives any number of colored prints from a single set of negatives. Well handled pictures show all the beauty of color found in animate or inanimate nature. Usable indoors or outdoors with natural or flash light. We supply all necessary materials for cameras of all sizes.

Write for our free booklet explaining color photography for your camera.

HESS-IVES CORPORATION
1201 Race Street, Philadelphia, Pa.

Dealers: If you are not already handling Hiblock plates, write for our offer today.

ITALY Comes to WALTHAM for TIME



THE kingdom of Italy has adopted the Waltham as the official watch for all Italian railroads. By comparative tests she proved the Vanguard to be the most accurate watch in the world.

Italy matched Waltham against the best watches of London, Geneva and Paris, then selected Vanguard for her railroads.

Dependability—that is the reason for Italy's choice. That is why the world's greatest railroads use more Waltham watches than all other makes combined. Especially is this true in the United States and Canada.

Italy's splendid tribute to Waltham supremacy is the tribute you will pay, once you have played and worked to the tick of Waltham accuracy.

The Vanguard

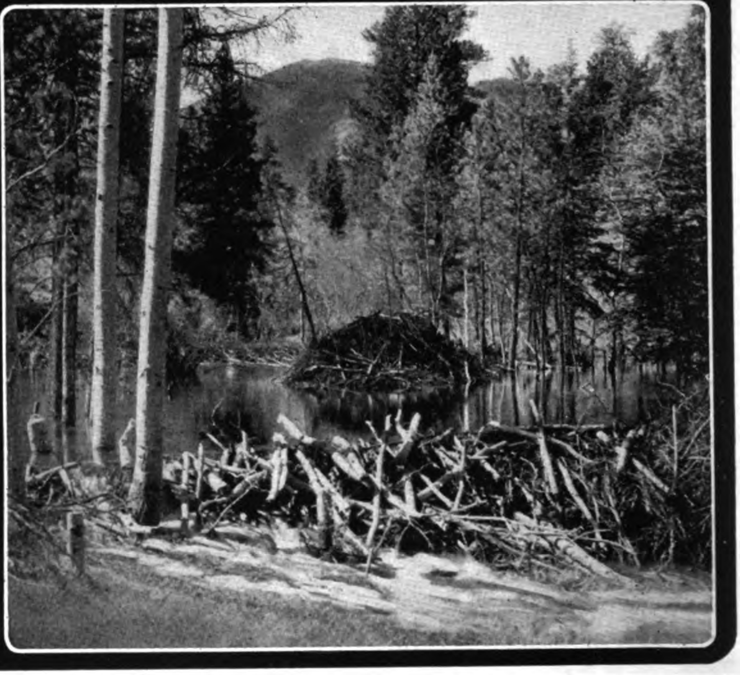
The world's finest railroad watch. 23 and 19 jewels

WALTHAM WATCH COMPANY
WALTHAM, MASS.

189 St. James Street
Montreal, Canada

WALTHAM
There is Nothing in the World
So Watchful Over Time as the WALTHAM Watch

BEAVER DAM AND HOUSE Rocky Mountain NATIONAL PARK



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COLORADO
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Plan Your Trip Via

Denver The Gateway to 12 National Parks and 32 National Monuments

See Denver's New Mountain Parks and Rocky Mountain National Park (Estes). The most wonderful mountain scenery in the world. 38 other Short Scenic Trips by Rail, Auto and Trolley. 14 one day trips. Low rates on all railroads.

Write Today For FREE Picture Book

that tells where to go, what to see, what it costs and how to enjoy your vacation in the cool Colorado Rockies. Address

DENVER TOURIST BUREAU
614 17th St., Denver, Colo.

The Supreme Test

Ever been on an ocean-going steamship? Then you know what terrific strain and vibration the wall lining of the staterooms, dining-room, and saloons must stand.

Compo-Board
PATENTED
TRADE MARK

is the only material, except steel or wood panels, that can satisfactorily withstand this severe test. It is now used on several steamships in preference to steel and wood.

There's *proof* of the strength, durability, moisture-proofness, decorative adaptability, non-warping, and non-shrinking qualities of Compo-Board—the modern wall-lining.

The *reason* is its wood-core construction. How important it is, then, that you look for and *get* the *wood-core* wall board when you ask for Compo-Board.

Write for sample and
interesting booklet.

THE COMPO-BOARD CO.
4512 Lyndale Ave. N.,
MINNEAPOLIS, MINN.

DEAF?

Let Us Show You That You Can Hear!

Don't Say It Cannot Be Done—

For over 310,000 deaf people now hear distinctly through the ACOUSTICON. Thousands of them have had their hearing permanently restored. In every occupation, science, and industry, self-supporting people are making their way because of the help given their hearing by the Acousticon. All you need do is to write us, saying: "I am hard of hearing and will try the Acousticon;" also state age and the cause of your deafness (if you know it); we will immediately send you, charges paid, the

1917 ACOUSTICON

FOR 10 DAYS' FREE TRIAL

No deposit, no obligation, no expense. In your own home, among your own family, give it any test. Use it ten days and we will leave it entirely to you to decide whether you want to keep it or return it.

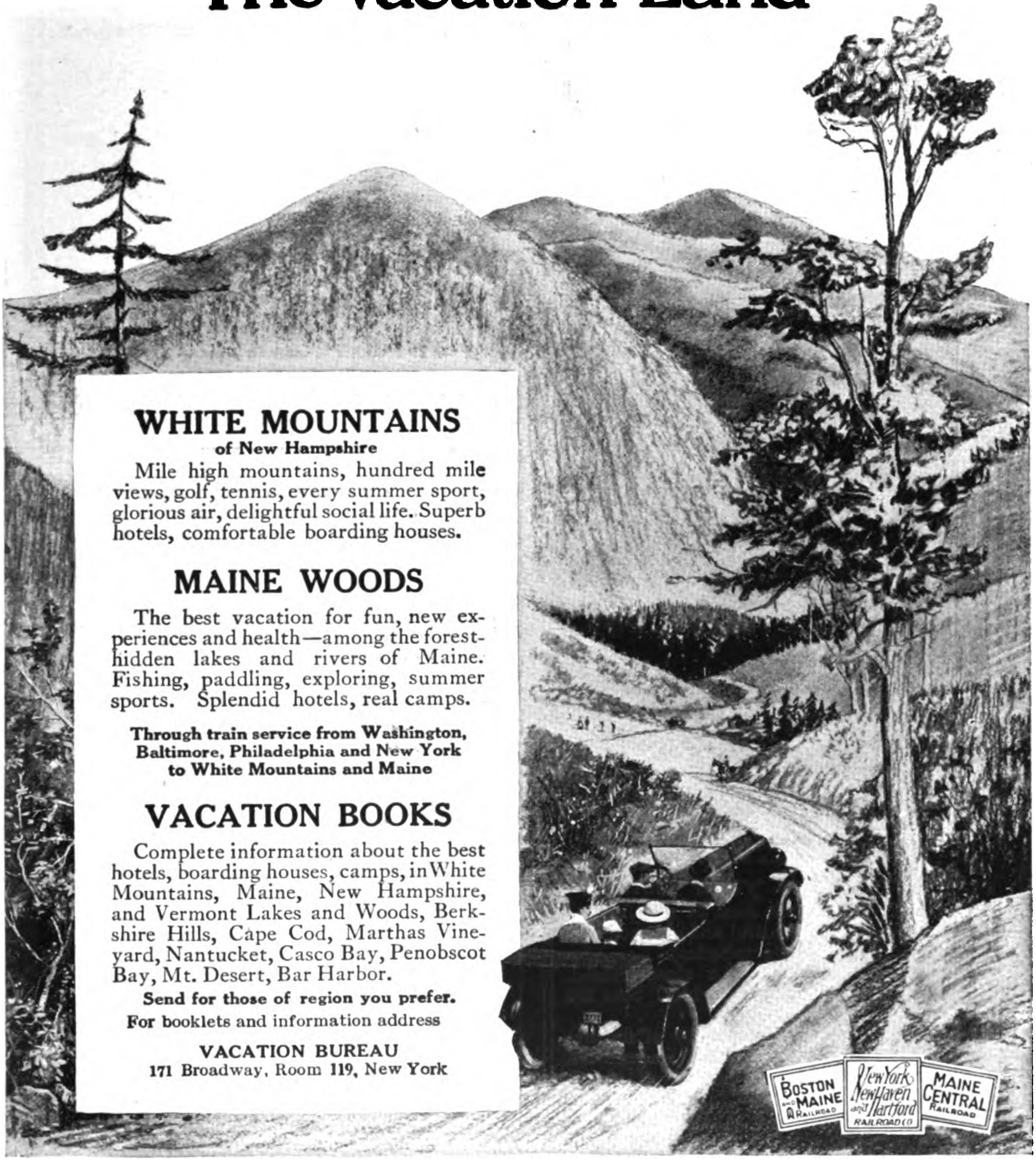
If it does not benefit you, we do not want you to buy it. We feel sure, however, that you will be one of the hundreds of thousands to whom it has given normal hearing.

BEWARE! The genuine Acousticon is made and sold only by the General Acoustic Co.—branches in all principal cities—never through agents. The Acousticon is the only instrument for the deaf RECOMMENDED by eminent Aurists. The results accomplished by the Acousticon cannot be had in any other manner.

SEND FOR YOUR FREE TRIAL TODAY—YOU ALONE TO DECIDE

GENERAL ACOUSTIC CO., 1311 Candler Bldg., New York
Canadian Address: 621 New Birks Bldg., Montreal

New England
The Vacation Land


BOSTON AND MAINE RAILROAD
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WHITE MOUNTAINS
of New Hampshire

Mile high mountains, hundred mile views, golf, tennis, every summer sport, glorious air, delightful social life. Superb hotels, comfortable boarding houses.

MAINE WOODS

The best vacation for fun, new experiences and health—among the forest-hidden lakes and rivers of Maine. Fishing, paddling, exploring, summer sports. Splendid hotels, real camps.

Through train service from Washington, Baltimore, Philadelphia and New York to White Mountains and Maine

VACATION BOOKS

Complete information about the best hotels, boarding houses, camps, in White Mountains, Maine, New Hampshire, and Vermont Lakes and Woods, Berkshire Hills, Cape Cod, Marthas Vineyard, Nantucket, Casco Bay, Penobscot Bay, Mt. Desert, Bar Harbor.

Send for those of region you prefer.

For booklets and information address

VACATION BUREAU
171 Broadway, Room 119, New York

Beautiful Highlands of Ontario

With millions of acres of hills and valleys clothed with unscarred forests of pine and spruce and dotted by thousands of lakes and streams, the "Highlands of Ontario" present the most wonderful vacation spot on the American continent. Breathe in the pure air at an elevation of 2,000 feet above the sea. Fishing, hunting, swimming, boating, canoeing, camping—all in an incomparable setting of scenic grandeur. Let the Grand Trunk Railway System plan your vacation at Algonquin Park, Muskoka Lakes, Georgian Bay, Lake of Bays, or Timagami, and you will never regret or forget. Good hotel accommodation. Write for free illustrated literature to

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GRAND TRUNK RAILWAY SYSTEM

"Beautiful Birch for Beautiful Woodwork"

Beautiful
birch

Living Room, Oakes Home, Evanston, Ill. White enamel on birch. Messrs. Schmidt, Garden & Martin, Chicago, Arch'ts

You live *inside* your home—

The interior woodwork must be a delight to the eye, harmonious, beautiful and in good taste. ("beautiful **birch**" characteristics).

"Beautiful **birch**" being a close-grained, hard, lasting wood forms an ideal base for white enamel.

It lends itself to a wide variety of finishes from light to dark, "holds its own" under hard usage, is "mar-proof," and above all else—*economical to buy.*

FREE *Six little panels in six handsome finishes with a common sense illustrated book. Write please.*

The NORTHERN HEMLOCK *and* HARDWOOD MANUFACTURERS' ASS'N

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First Mortgage bonds on a natural resource.

Security three to one.

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Twenty years' successful history.

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Proceeds of loan to increase Company's output.

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(A 352)

Let STONETEX Renew Your Masonry Walls

TRUS-CON LABORATORIES

Renew the beauty of stucco concrete or brick buildings! Obtain soft-hued, uniform tones—rainproof, dampproof—a lastingly beautiful finish—by applying TRUS-CON STONE-TEX.

A liquid cement coating, applied with a brush. Devised solely for masonry surfaces. Unlike paints, cannot chip, flake or peel off. Fills all pores and hair cracks, making the wall hard as flint and sealed against moisture. Suitable for new or old walls. Furnished in many pleasing colors, **STONE-TEX** is one of the famous Trus-Con Waterproofing and Dampproofing products—sufficient assurance of quality.

If your brick, stucco, concrete or stone building is disfigured or damp and unsanitary, use STONE-TEX. Write for full information, telling your needs.

The Trus-Con Laboratories
178 Trus-Con Bldg., Detroit, Michigan
We specialize in unusual paint requirements. Write for advice.

Your Income Tax

On June 15, 1917, every one whose income last year amounted to $3,000 or more paid the tax assessed by the Federal Government.

Returns from this tax are of the utmost importance to the Government, especially at the present time.

It is the duty of every individual subject to this tax to coöperate with the Government in simplifying the process of collection.

For the convenience of investors we have prepared a sixteen-page individual income record book which will greatly facilitate the making out of annual income reports.

Complimentary copy on request. Mention edition N6.

This is indicative of the attention—even to the smallest particular—which our clients receive through the Compton Investment Service.

William R. Compton Company

Municipal Bonds

"Over a Quarter Century in This Business"

NEW YORK: 14 Wall Street **ST. LOUIS: 408 Olive Street**
CHICAGO: 105 S. La Salle Street **CINCINNATI: 102 Union Trust Building**
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July Investments
To Net 5½—6%

IN war time conditions, shrewd investors are turning back to the land and its earning-power for unimpeachable security. This widespread demand is met in the first mortgage bonds we offer, safeguarded under the *Straus Plan.*

EACH issue is a first mortgage on a high grade building and land in

New York Chicago Los Angeles
Detroit Philadelphia St. Louis

or some other large city. Price to net 5½—6%. Write for our booklet, "Acid Tests of Investments in War Time", and for

July Investment List No. F-708

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35 years without loss to any investor

Our Service—
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No. 4—Trustees' Requirements

Appreciating the restrictions placed upon the investments of Savings Banks and Trustees, we maintain at all times a comprehensive list of issues eligible and attractive as to safety and yield for these various purposes.

Send for our current
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The National City Company

National City Bank Building
New York

THE Hindu's belief that the mighty Ganges purifies his morals while cleansing his body and garments causes him to use its water frequently, even though put to the inconvenience of having it sent to him.

The widespread knowledge of how easy, pleasant and inexpensive it is to keep clean with Ivory Soap causes the American people to use tons upon tons of it every day. The love of cleanliness in body, clothes and home is fostered and quickened by the safe, efficient, economical work done by every cake of Ivory.

IVORY SOAP 99 44/100% PURE

IT FLOATS

Factories at Ivorydale, O.; Port Ivory, N. Y.; Kansas City, Kans.;
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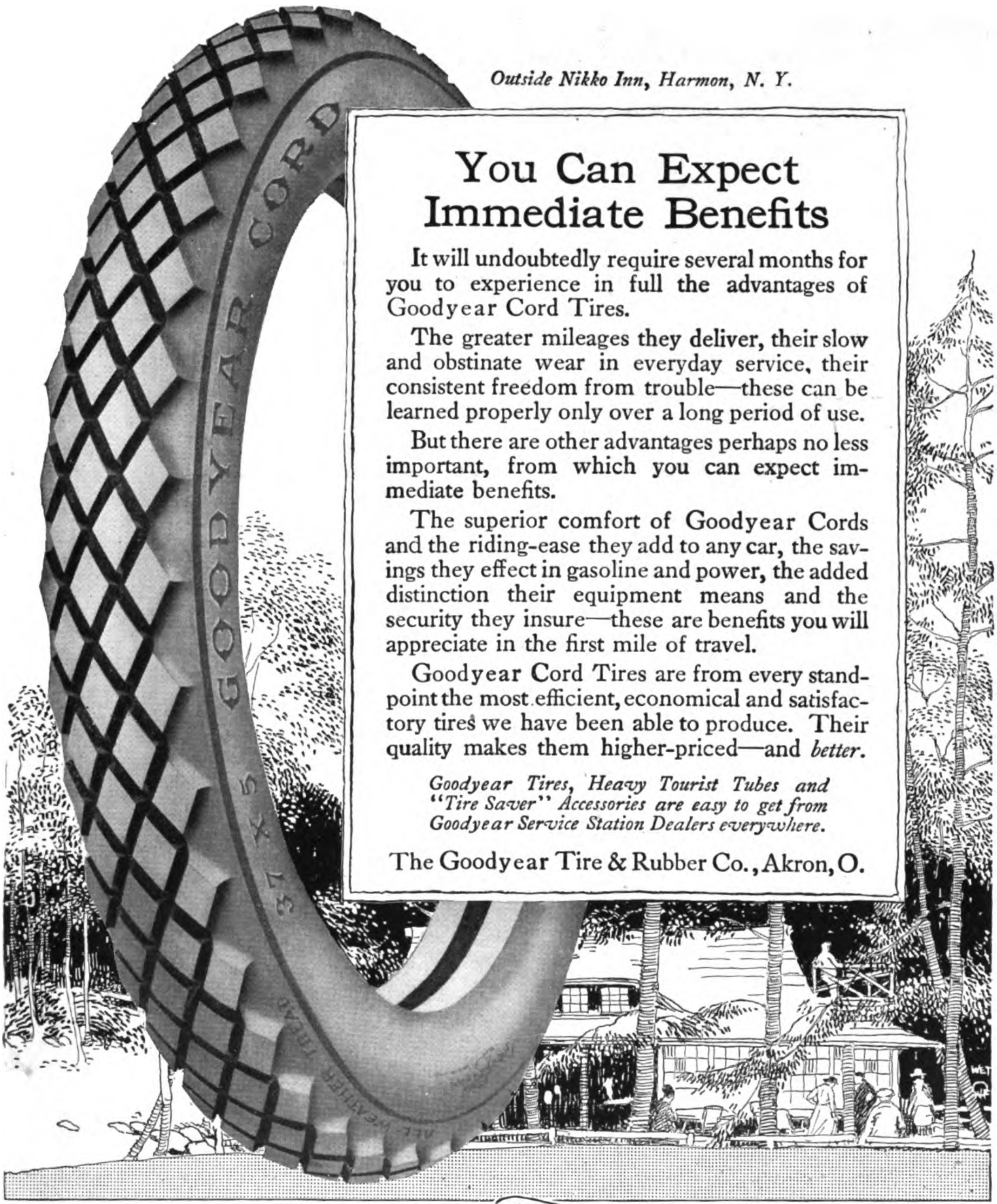


Outside Nikko Inn, Harmon, N. Y.

You Can Expect Immediate Benefits

It will undoubtedly require several months for you to experience in full the advantages of Goodyear Cord Tires.

The greater mileages they deliver, their slow and obstinate wear in everyday service, their consistent freedom from trouble—these can be learned properly only over a long period of use.

But there are other advantages perhaps no less important, from which you can expect immediate benefits.

The superior comfort of Goodyear Cords and the riding-ease they add to any car, the savings they effect in gasoline and power, the added distinction their equipment means and the security they insure—these are benefits you will appreciate in the first mile of travel.

Goodyear Cord Tires are from every standpoint the most efficient, economical and satisfactory tires we have been able to produce. Their quality makes them higher-priced—and *better.*

Goodyear Tires, Heavy Tourist Tubes and "Tire Saver" Accessories are easy to get from Goodyear Service Station Dealers everywhere.

The Goodyear Tire & Rubber Co., Akron, O.

GOODYEAR

AKRON

CORD TIRES

Westinghouse

SMALL MOTORS, FANS, ELECTRIC WARE FOR THE HOME

Your Unseen Servant

He comes at your bidding, but you do not see him.

You turn a switch or put a plug in a socket, and instantly he is at work.

He lights your lamps, cooks your meals, washes and irons your clothes, sweeps your rooms, gives you a breeze on hot summer nights, freezes your ice-cream, warms your bed, heats the baby's milk, runs your sewing-machine, polishes your silver, grinds your knives, transports you to your office, and carries you up or down in the elevator.

He works for small wages and is at your service twenty-four hours a day.

But you would not have this universal servant—at an expense anyone can afford—except for the work of many engineers who have made possible the economic generation of electric current and provided the means of turning that current into light, heat, and power.

When you use your Westinghouse Electric Iron or Toaster-Stove or Sew-Motor, you owe the lightening of your household tasks not alone to these appliances, but to many other types of electrical apparatus in the origination and perfection of which Westinghouse engineers have played a leading part.

These include the turbo-generators in the power-house miles away, that generate the electricity, and the switchboards, meters, transformers, rectifiers, regulators, and more that make possible the control, distribution, and use of this great force.

And Westinghouse engineering has been accompanied at every step by complete manufacturing facilities and high manufacturing standards.

Thus Westinghouse quality is the same, whether in a great 15,000-horsepower blooming mill motor, a 75,000-kilowatt generator, or little fan motors and electric irons in a million homes.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO.
East Pittsburgh, Pa.

A Westinghouse Electric Fan keeps the home comfortable in hot weather for a few cents a day.

Westinghouse Electric Ware for the table provides a quick, easy, and efficient way to prepare breakfast and supper.

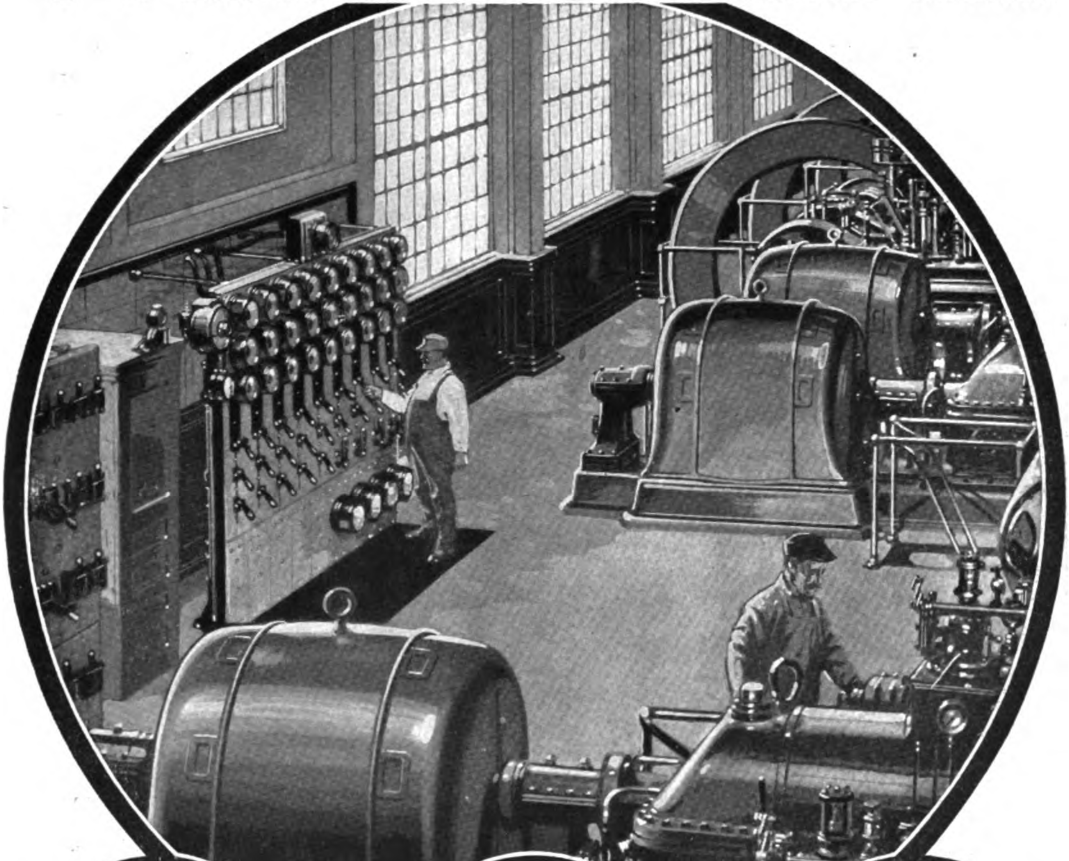
WESTINGHOUSE ELECTRIC

A Westinghouse Sew-Motor makes an electric machine of any ordinary sewing-machine, abolishing the toil of treadling.

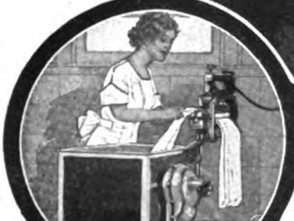
A Westinghouse Electric Iron eliminates the hot stove, saves steps, and is ready any time anywhere there's a lamp-socket.

Westinghouse

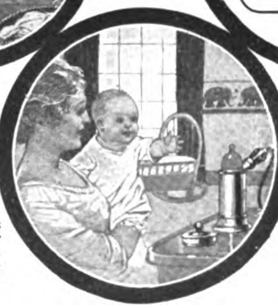
COMPLETE · EQUIPMENT FOR CENTRAL STATIONS



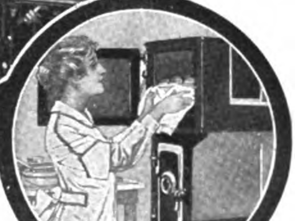
WESTINGHOUSE ELECTRIC



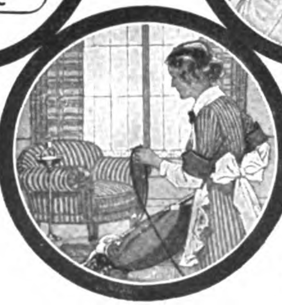
An Electric Washing-machine, equipped with a Westinghouse Motor, saves time, labor, and wear-and-tear on the clothes.



A Westinghouse Electric Milk-Warmer heats the baby's milk quickly at the turn of a switch. Can be attached wherever there's a light-socket.



With a Westinghouse Automatic Electric Range the dinner is ready to serve when you come home after an all-day absence.



An Electric Vacuum Cleaner, driven by a Westinghouse Motor, ends tiring, unsanitary, inefficient sweeping with a broom.

Your other camera.

A Vest Pocket Kodak

Although you have a grand-father's clock in the hall, a Dresden clock on the drawing-room mantel, an alarm clock in your bed-room, a chronometer in your motor car and an eight day clock on your office desk, you always wear a watch.

Similarly you may have and carry other cameras—you *wear* a Vest Pocket Kodak. It's the accurate, reliable, unobtrusive little Kodak that you can have always with you for the unexpected that is sure to happen.

Contact V. P. K. prints are 1⅝ x 2½ inches; enlarged prints of post card size (3¼ x 5½ in.) are but fifteen cents.

The Vest Pocket Kodaks are $6.00. The V. P. K. *Specials* with Anastigmat lenses are $10.00, $20.00 and $22.50.

At your dealer's.

EASTMAN KODAK CO., ROCHESTER, N. Y., *The Kodak City.*

DODGE BROTHERS
CLOSED CAR

Its uncommon beauty appeals
to feminine good taste

The convertible coupe is
well designed, well finished,
well upholstered, roomy—and
suited for use the year 'round.

Coupe or Sedan, $1265. In Canada, $1800
Touring Car or Roadster, $835. In Canada, $1185
All prices f. o. b. Detroit

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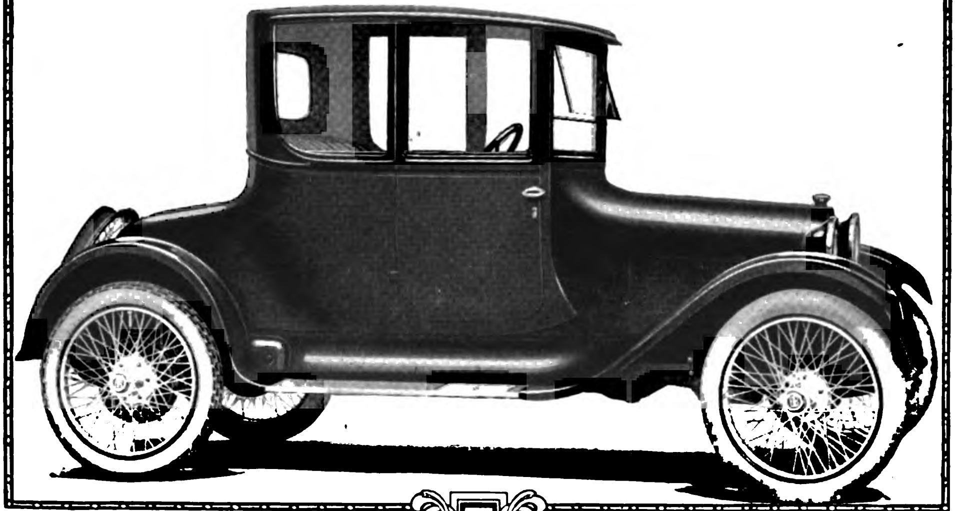

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Mapleware

Lunch Set

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12 Sanitary Spoons or Spreaders
1 Table Cover—48 x 60 inches (wood fibre)
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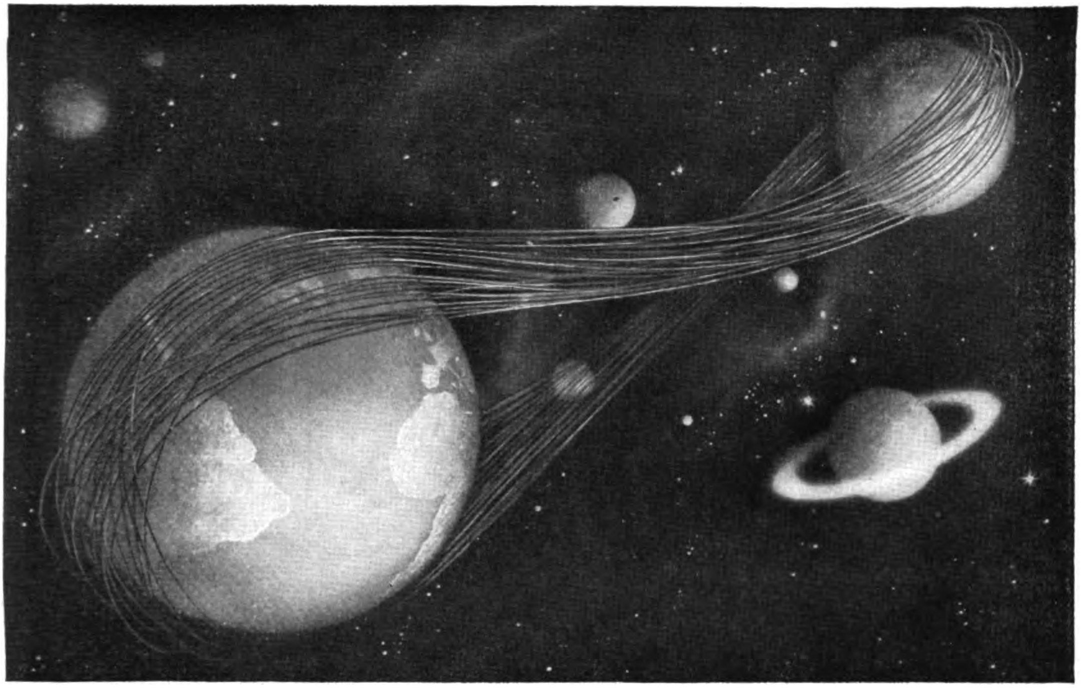

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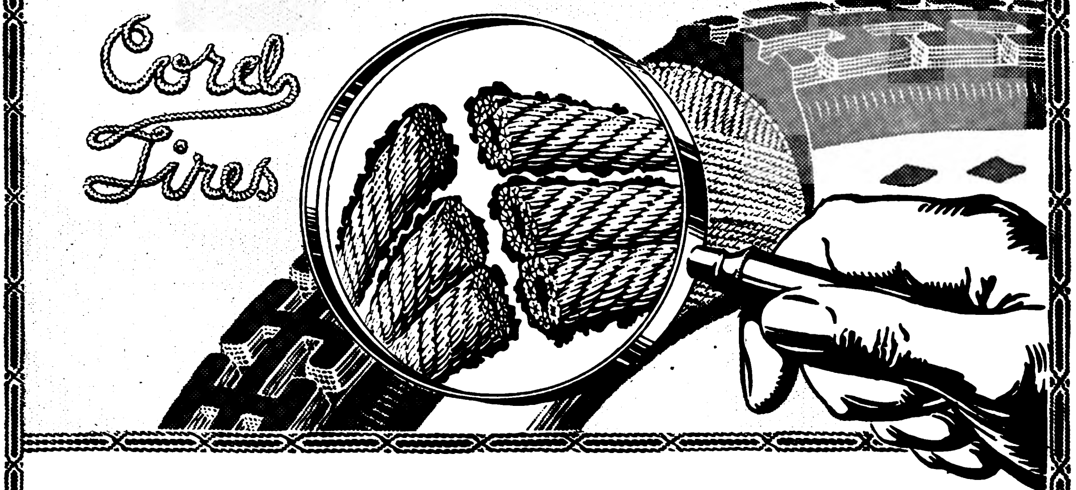

Cable Cord—40% Rubber

Immune to Tire Fever

BEHOLD how *cord* and *rubber* are fused into the flexible, powerful *cable-cord* which forms the exclusive *patent-protected* body of a Silvertown tire. Note the *rubber core*, and how each *cord tendon* in the cable-cord lies completely encased in a cushion of rubber.

Corded and cabled under high pressure, which replaces all air in the fiber with rubber gum, it is fused with rubber as a cobbler's waxed end is waxed with wax.

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Moreover they give a style, a smoother riding comfort and gasoline saving economy you can not afford to deny yourself.

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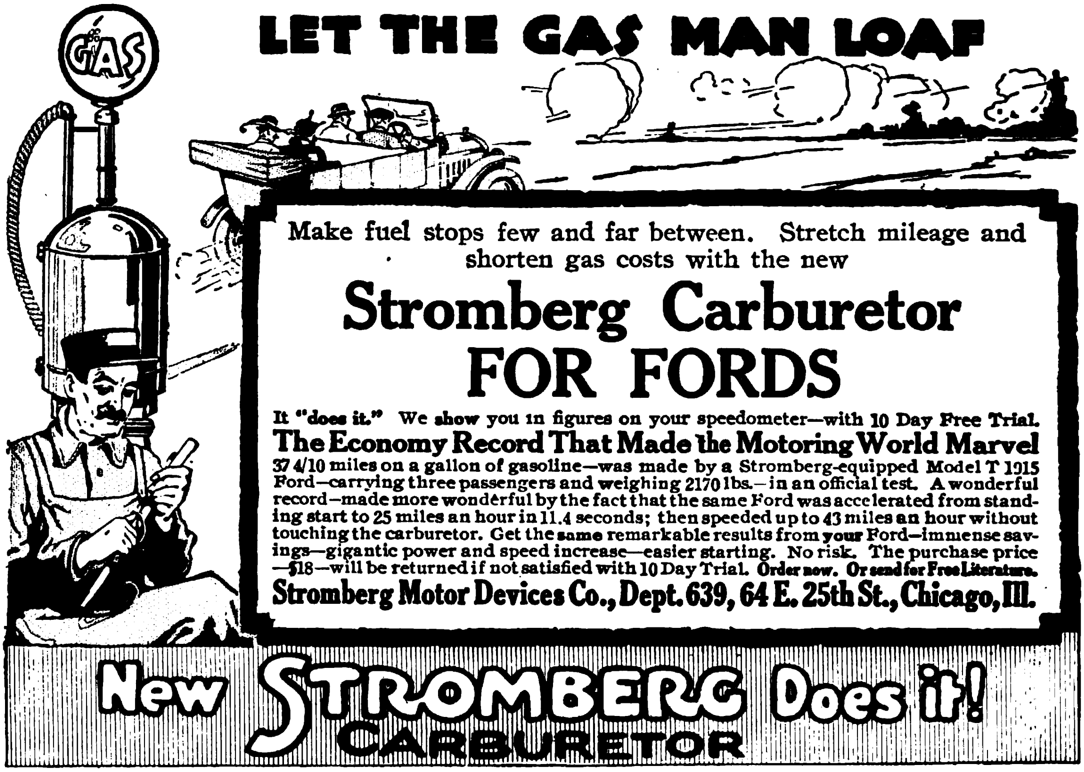

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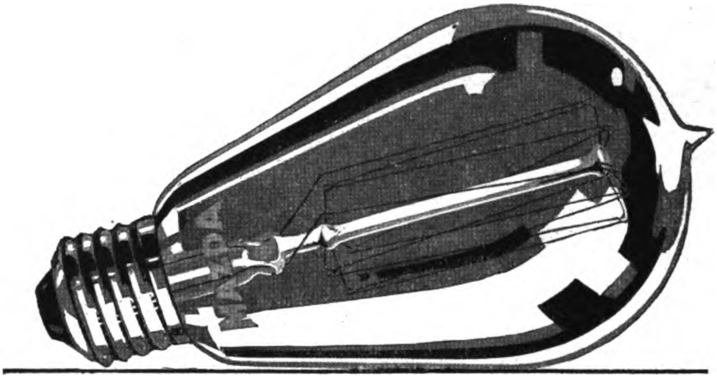

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MAZDA is the trademark of a world-wide service to certain lamp manufacturers. Its purpose is to collect and select scientific and practical information concerning progress and developments in the art of incandescent lamp manufacturing and to distribute this information to the companies entitled to receive this Service.

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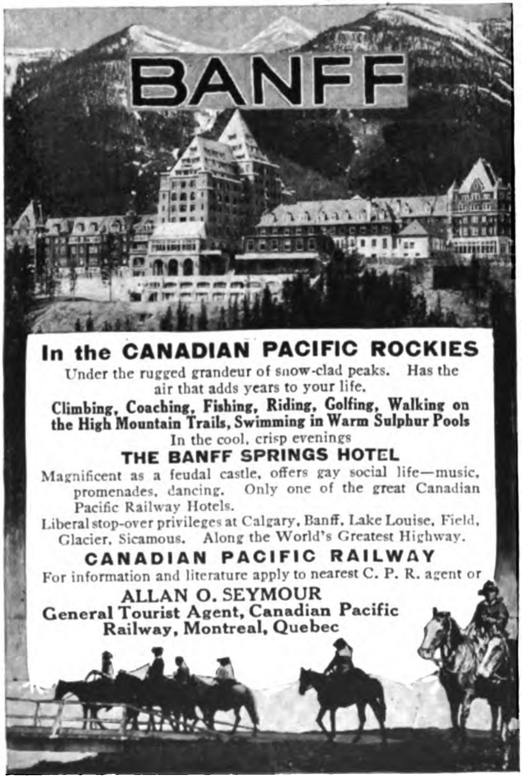

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Resinol Soap does this because it is an exquisitely pure and cleansing toilet soap containing the *Resinol* medication which physicians prescribe, in Resinol Ointment, for the treatment of skin affections. With its use, the tendency to pimples is lessened, redness and roughness disappear, and the skin usually becomes a source of pride and satisfaction.

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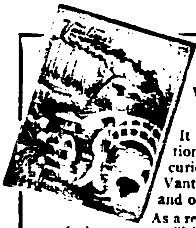

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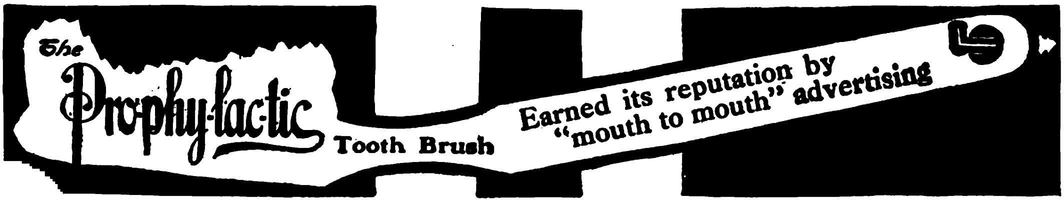

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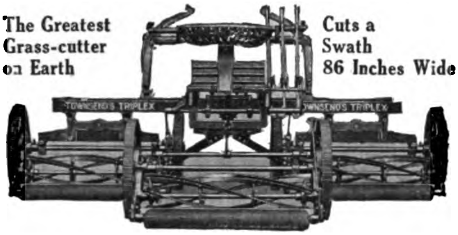

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86 Inches Wide

Floats Over the Uneven Ground as a Ship Rides the Waves.

One mower may be climbing a knoll, the second skimming a level, while the third pares a hollow. Drawn by one horse and operated by one man, the TRIPLEX will mow more lawn in a day than the best motor mower ever made; cut it better and at a fraction of the cost.

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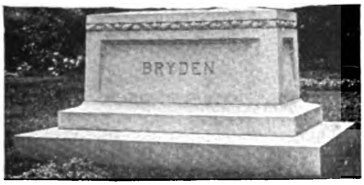

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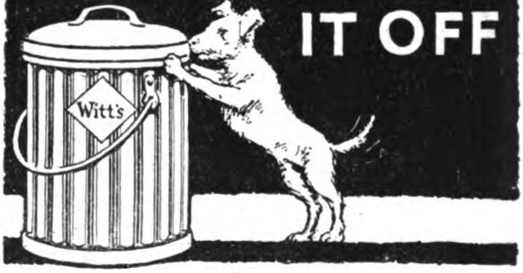

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